



Sustainable Mobility in the Upper Rhine Region

La manifestation de clôture // Abschlussveranstaltung
17.11.2021

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



Nétiquette

Sur place

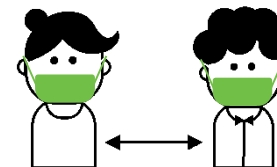
Veillez enregistrer vos questions à main levée



Veillez parler dans le microphone pour que les participants en ligne comprennent votre question



Veillez mettre votre masque lorsque vous quittez votre siège



En ligne

Les questions peuvent être posées à tout moment pendant le chat. Le modérateur transmettra les questions aux orateurs



Netiquette

Vor Ort

Bitte melden Sie Fragen mit einem Handzeichen an

Bitte sprechen Sie ins Mikrofon, damit die Online-Teilnehmer Ihre Frage verstehen

Bitte ziehen Sie Ihre Maske auf, wenn Sie Ihren Platz verlassen

Online

Fragen können jederzeit im Chat gestellt werden. Die Moderatorin wird die Fragen an die Referenten weiterreichen



Sustainable Mobility in the Upper Rhine Region

Prof. Dr. Wolf Fichtner
KIT-DFIU

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



About the project

NUMBERS AND FACTS

Financing and partners

Project duration
07/2018 –12/2021



Funded by



Fonds européen de développement
régional (FEDER)
Europäischer Fonds für regionale
Entwicklung (EFRE)



Co-financing partners



Associated partners

About 20 associated partners



Networks

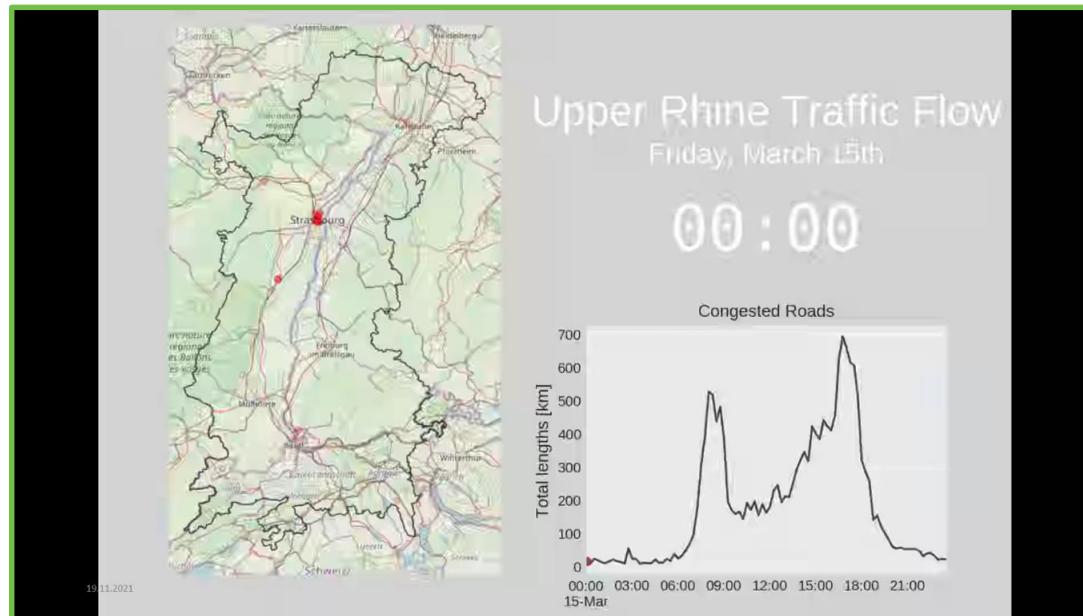


About the project

MOTIVATION AND OBJECTIVES

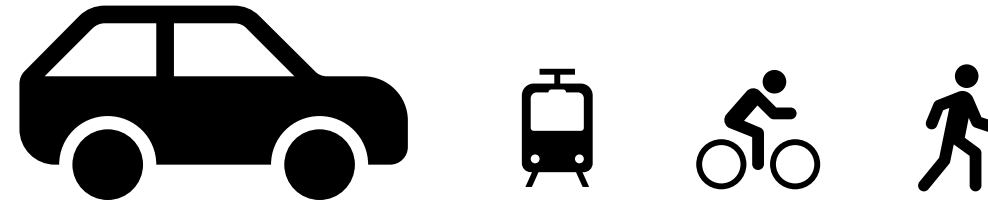
Situation in the Upper Rhine Region

Traffic load



→ Huge traffic load in the Upper Rhine Region, leading to great loss of time

Modal split



Cars are dominating the share of cross-border commuting

→ Lack of alternatives

Greenhouse gas emissions

of greenhouse gas emissions result from traffic in the Upper Rhine Region

~20%

2. biggest source of greenhouse gas emission after industry

→ Urgent need to promote sustainable transport alternatives

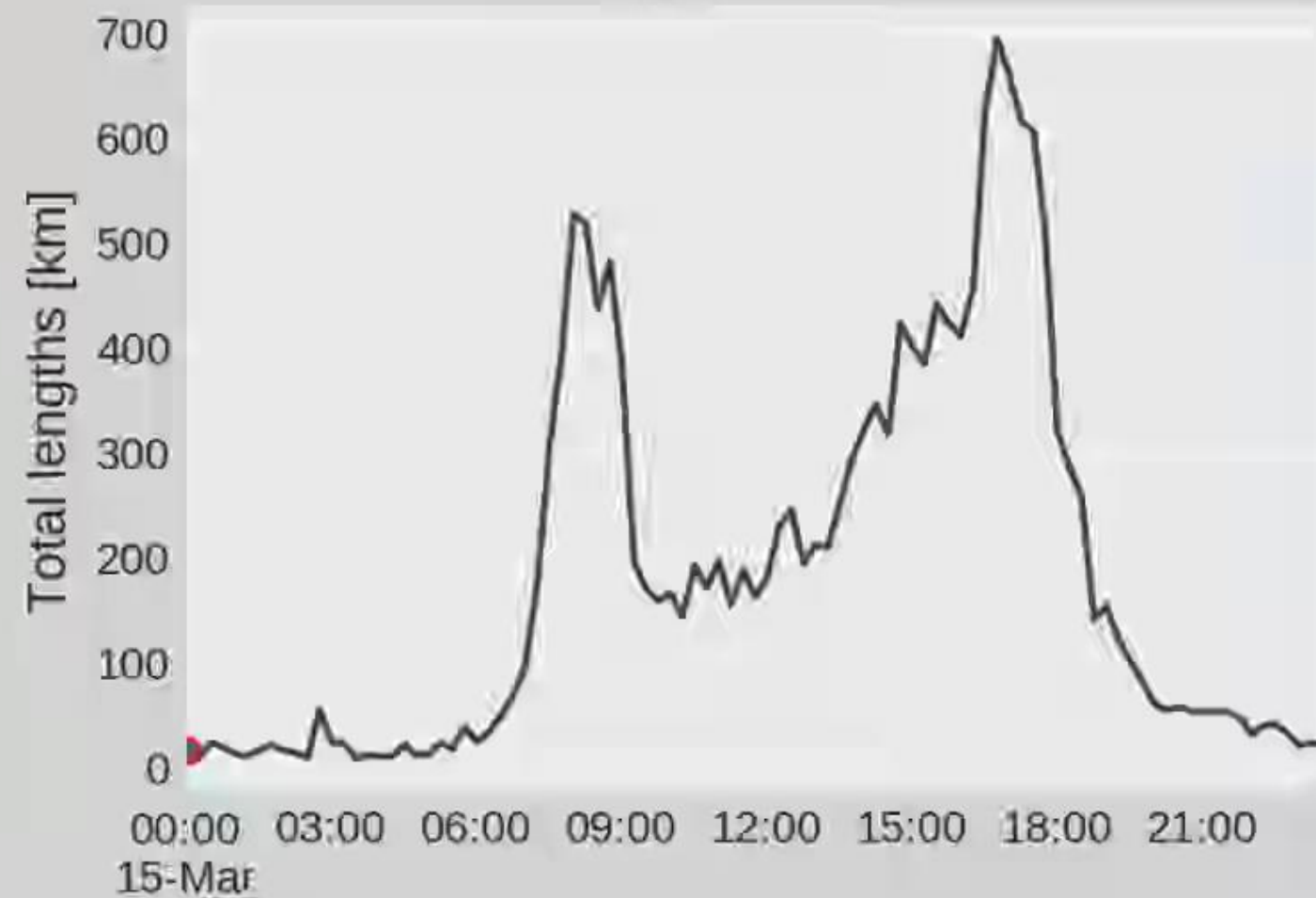


Upper Rhine Traffic Flow

Friday, March 15th

00 : 00

Congested Roads



Challenges in the Upper Rhine Region and goals of the SuMo-Rhine project

Challenges

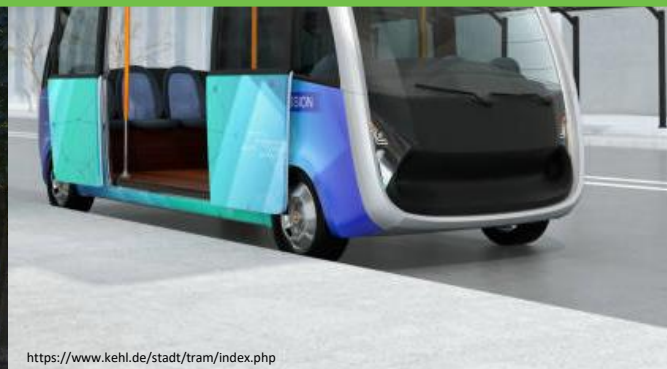
- High demand for sustainable and reliable transport concepts for cross-border mobility in border regions.
- How can we promote sustainable concepts for cross-border mobility?

Goals

- Development of an integrated tool (indicator system) to assess the sustainability of mobility concepts.
- Strengthening the municipal level to enable a participatory transformation towards sustainable mobility



How can sustainable mobility in the Upper Rhine Region be made measurable at the municipal level?



<https://www.kehl.de/stadt/tram/index.php>



Von Matthias Süßen - Eigenes Werk, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=77599806>



Von Maximilian Dörbecker (Chumwa) - Eigenes Werk, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=3178513>

From project start to project end

THE MILESTONES OF THE SUMO-RHINE PROJECT OVER TIME

Retreat Meetings

Nov 18

Feb 20

Two retreat meetings within the project duration

The goals

- Check work status
- Develop work plans
- Identify interfaces between work packages
- Strengthening the team spirit



Presentations and public relations

Nov 19

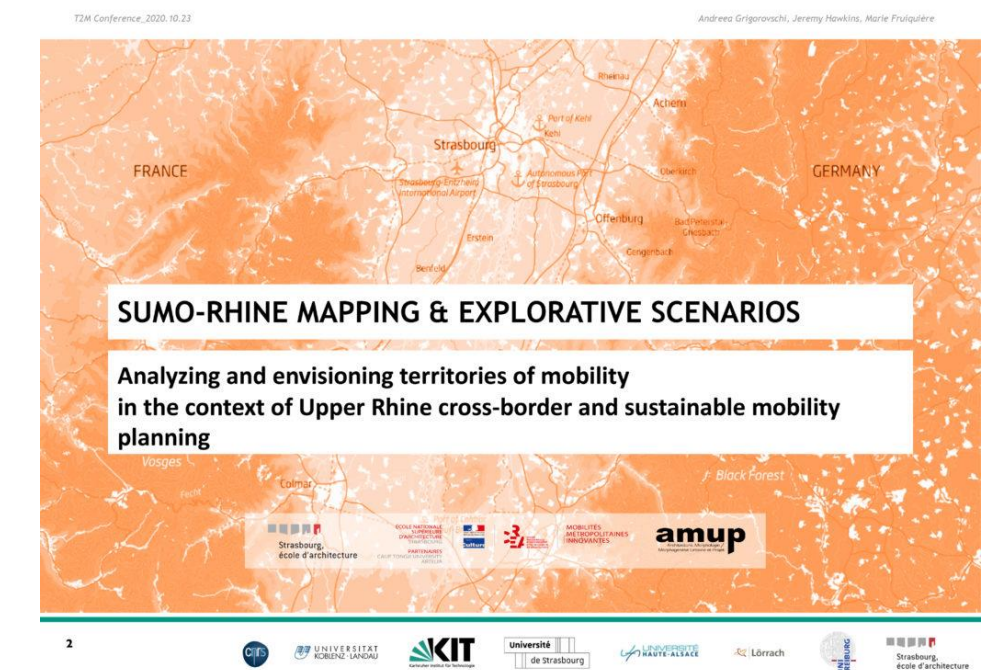
Jan 20

Oct 20

The SuMo-Rhine project was presented in a wide variety of situations:

- Presentation of the project at the **Baden-Württemberg Ministry of Transport** and at the **New Year's reception of the Karlsruhe Chamber of Commerce and Industry**
- Presentation by the University of Koblenz-Landau in October 2020 as part of an **ADEUS workshop** on methods for monitoring cross-border mobility
- Presentation by ENSAS in October 2020 at the **T2M / THNS Joint Virtual Conference 2020**
- Additional reports in various media and brochures about the project (e.g. Coordination Office of the Science Pillar, EUCOR, "Europe Direct - Citoyens & Territoires Grand Est", etc.)

- **Französische und deutsche Methoden, angewandt auf den Eurodistrikt Straßburg-Ortenau : Sammeln von Daten der täglichen Mobilitätspraktiken**
Anna TRENTINI et Janine RUF, Referentinnen ADEUS
- **Verschiedene Beiträge zur Beobachtung von Mobilitätspraktiken :**
 - Beobachtung von Mobilitätspraktiken durch die Umfrage "Mobilität in Deutschland"
Lutz LINDNER, Referent Mobilität des Verbandes Region Rhein Neckar
 - Beobachtung von Mobilitätspraktiken durch die Umfrage « Ménages Déplacements »
Timothé KOLMER, Referent Mobilität ADEUS
 - Beobachtung der Verkehrsströme an der gesamten deutschen Grenze an Hand des "Erreichbarkeitsmodells"
Claire DUVERNET, Bundesamt für Bau-Stadt-und-Raumplanung (BBSR)
 - Beobachtung grenzüberschreitender Mobilitätspraktiken im Rahmen des INTERREG-projekts SumoRhine
Melanie STRÖBEL, Universität von Koblenz-Landau



Workshops & colloquia

Mar 19

Jun 19

Nov 19

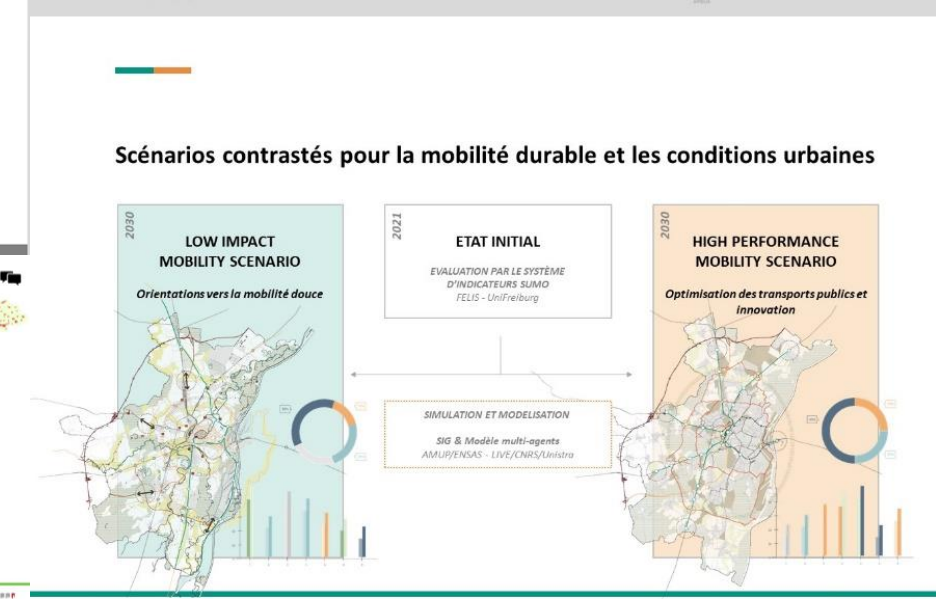
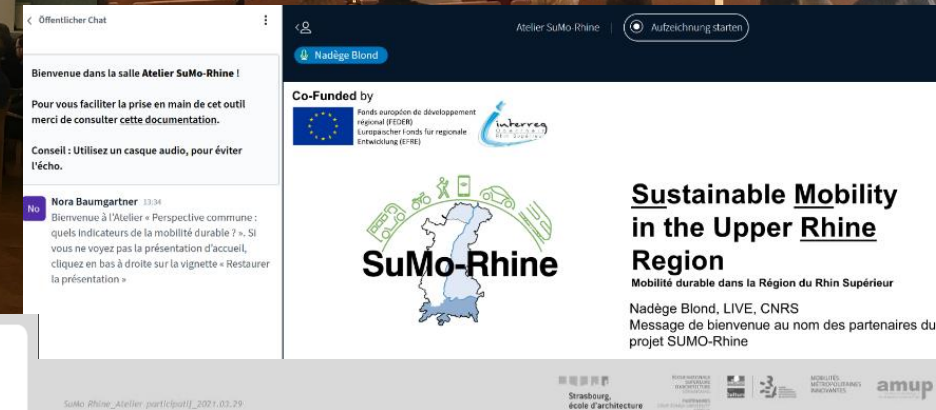
Dec 19

Jun 20

Dec 20

Mar 21

- Opening colloquium with over 100 participants in Karlsruhe
- Seven workshops during the project period - four on-site, three online.
- The workshops covered a wide range of topics
 - Presentation, further development and discussion of the indicator calculations
 - Presentation of results from interviews and document analysis
 - Presentation and discussion of future scenarios



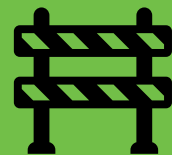
Challenges



- Corona as the main challenge
- Enormous changes in the project environment and schedules



- Redesign of commuter surveys necessary
- Municipal contact persons face other challenges



- Due to the unprecedented closure of the border:
 - No binational workshops & meetings possible on site
 - No commuters across the border



- Difficulty of informal exchange within the well-rehearsed international team
- Challenge of using tools that are allowed at different institutions

Thank you!

Nora.baumgartner@kit.edu



Funding Period
07/2018 – 12/2021

Co-Funding Project Partners



Associated Partners



Networks



Agenda

Accueil 13h00 – 13h15 Begrüßung

Présentation des résultats du projet (1/2) 13h15 – 14h00 Vorstellung der Projektergebnisse (1/2)

Echanges et questions 14h00 – 14h15 Fragerunde

Pause-café 14h15 – 14h30 Kurze Kaffeepause

Présentation des résultats du projet (2/2) 14h30 – 15h15 Vorstellung der Projektergebnisse (2/2)

Echanges et questions 15h15 – 15h30 Fragerunde

Pause-café et networking 15h30 – 16h00 Kaffeepause und Netzwerken

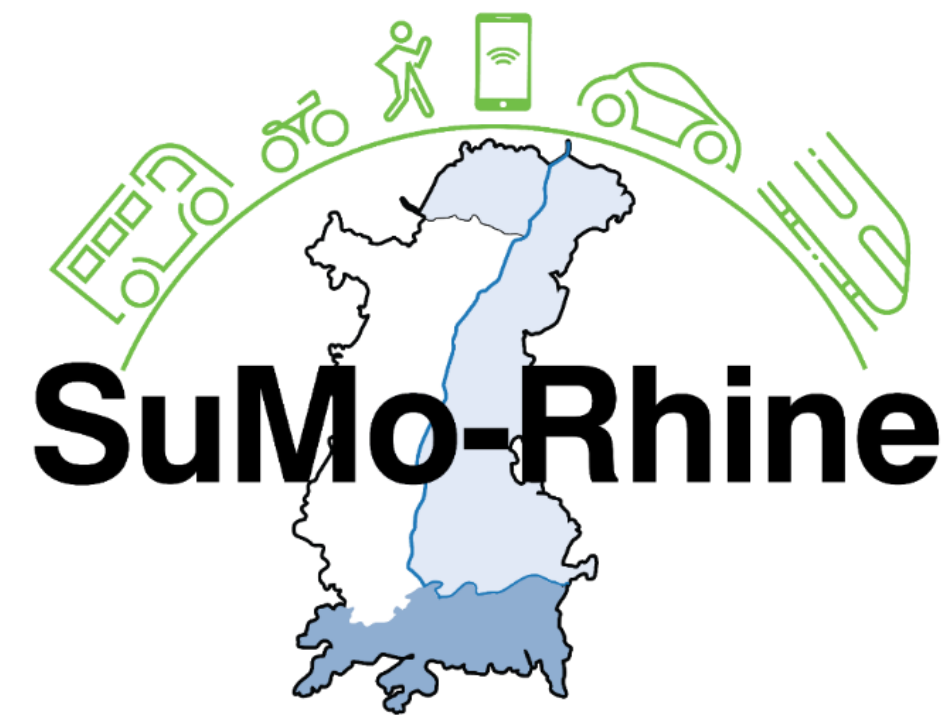
Débats : Promotion de la mobilité durable dans la région du Rhin supérieur 16h00 – 16h45 Podiumsdiskussion: Förderung von nachhaltiger Mobilität in der Oberrheinregion

Perspectives 16h45 – 16h55 Ausblick

Clôture de la manifestation 16h55 – 17h00 Abschließende Worte

Présentation des résultats du projet // Vorstellung der Projektergebnisse (1/2)

KIT-ECON
UNIVERSITÉ KOBLENZ-LANDAU
UNIVERSITÉ DE FRIBOURG



Challenges of mobility planning at municipal level

Dr. Eckhard Szimba (KIT-ECON)

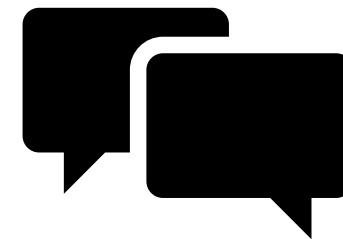
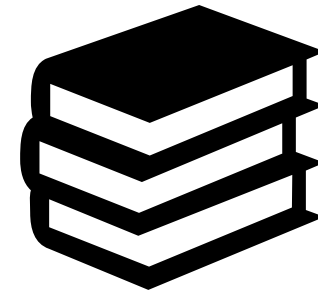
Jan Klenner/ Fabio Kurz/ Johannes Pfeifer (KIT-ECON),
Nadège Blond/ Paul Salze (CNRS)

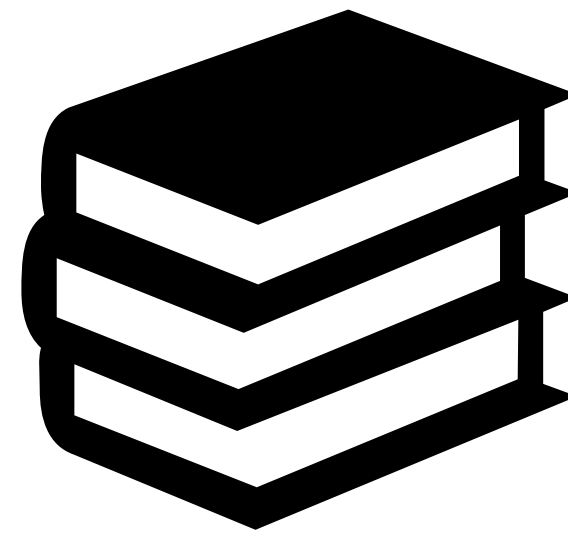
SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



Agenda

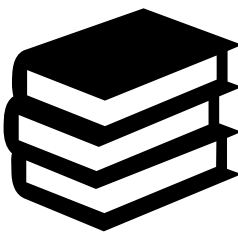
- Selected results from the analysis of policy documents
- Selected results from the survey among urban transport planners in the Upper Rhine Region
- Conclusions





ANALYSIS OF POLICY DOCUMENTS

Scope of the analysis of policy documents

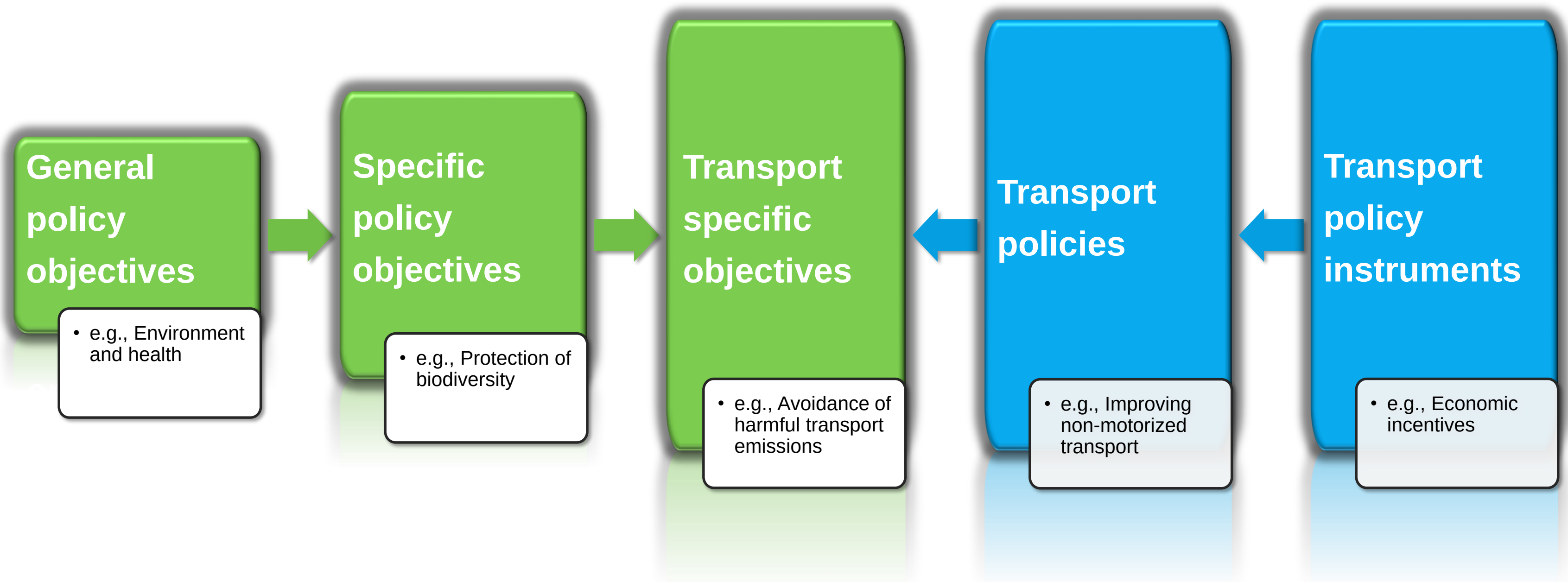


- Focus on policy documents from various administrative levels
 - European Union
 - Bi-/ trilateral agreements
 - National level
 - International regional level
 - Regional level
 - District level
 - Urban level
- Analysis of policy objectives, policy measures, objective hierarchies, modes concerned etc.
- Number of policy documents covered: 61
- Number of policy objectives covered: 498
- Number of policy measures covered: 323



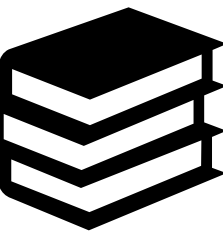
Objective hierarchy and transport policies

Concept followed in SuMo-Rhine

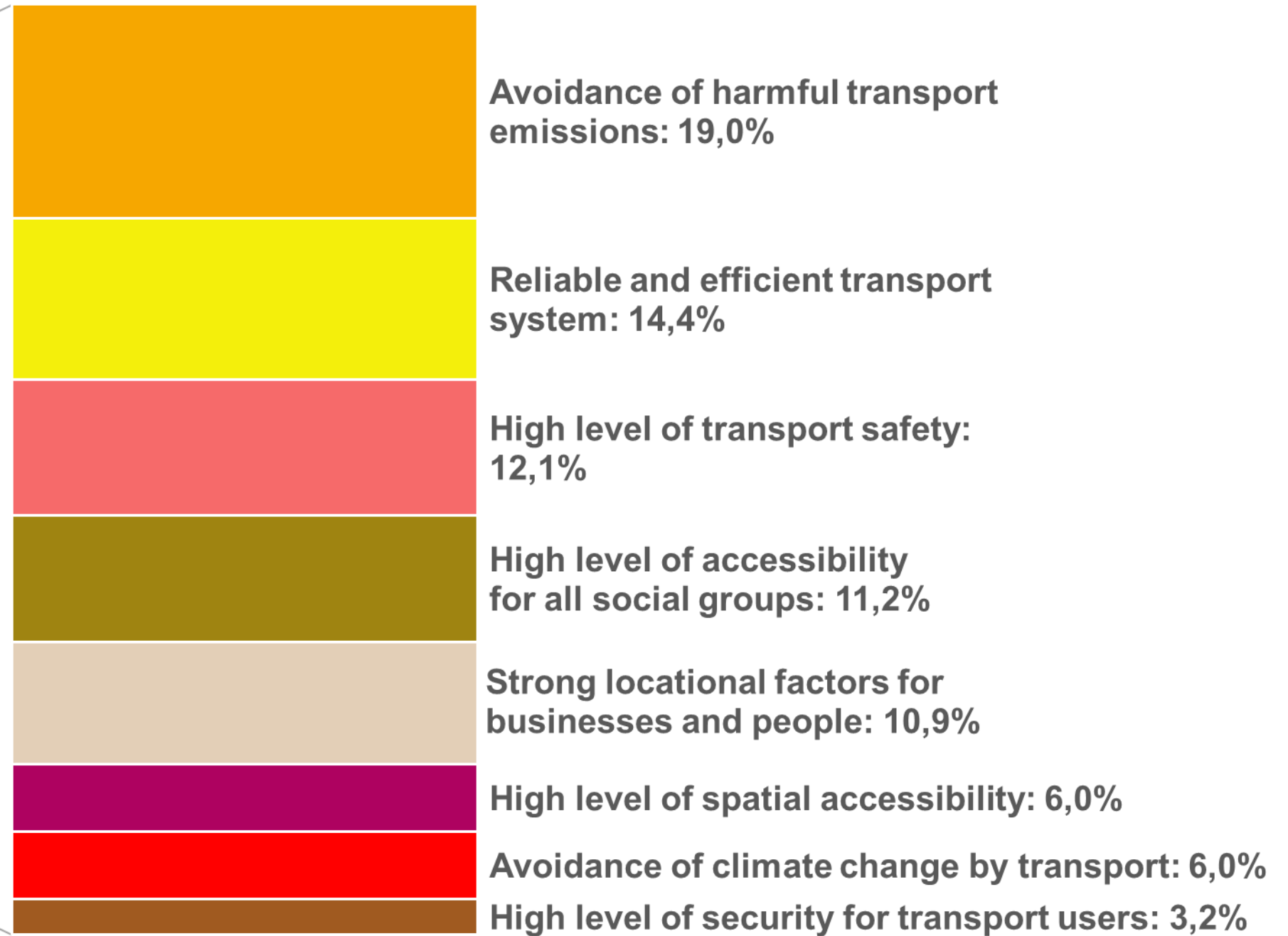
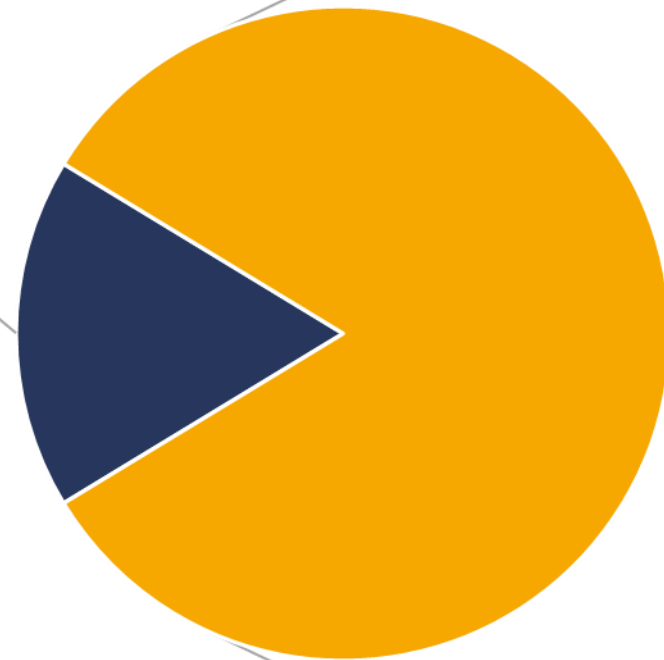


Transport specific objectives

Most frequently mentioned objectives

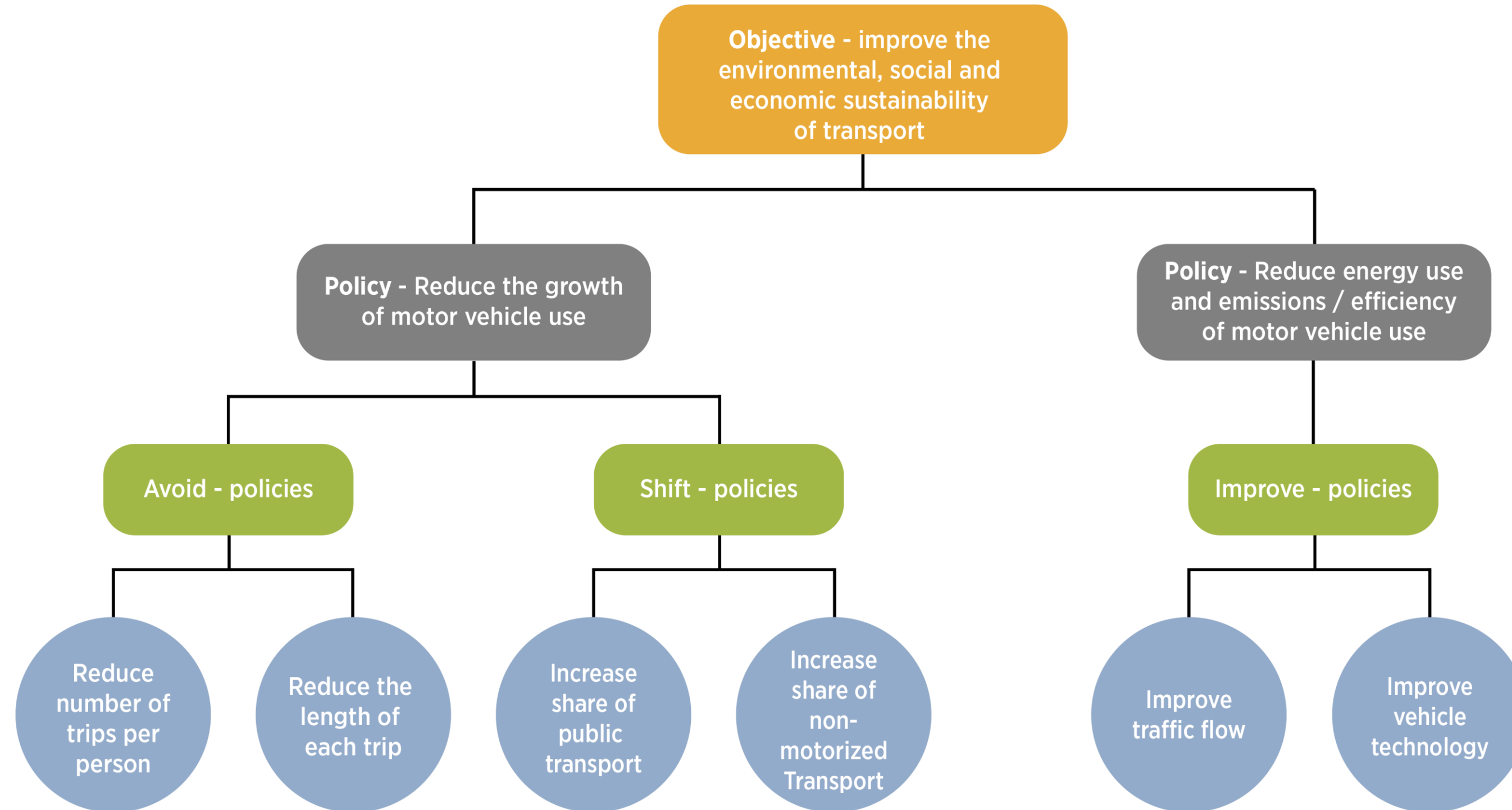
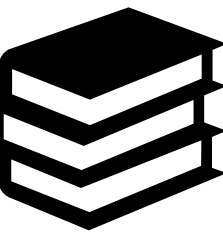


Percentage of mentions of the ten remaining objectives: 17,4%



Transport policy categorization

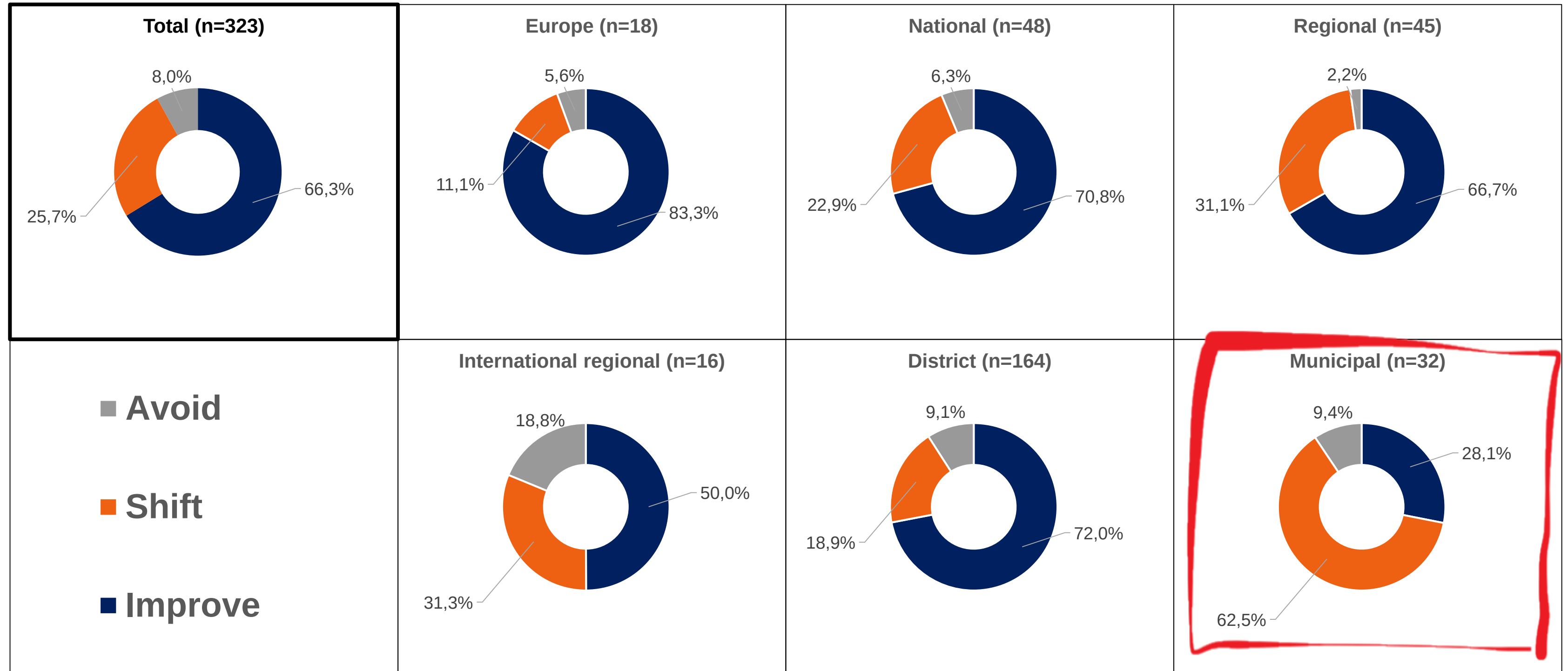
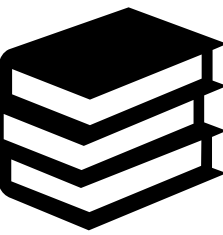
Avoid – Shift – Improve



Source: own illustration, based on Worldbank (2014)

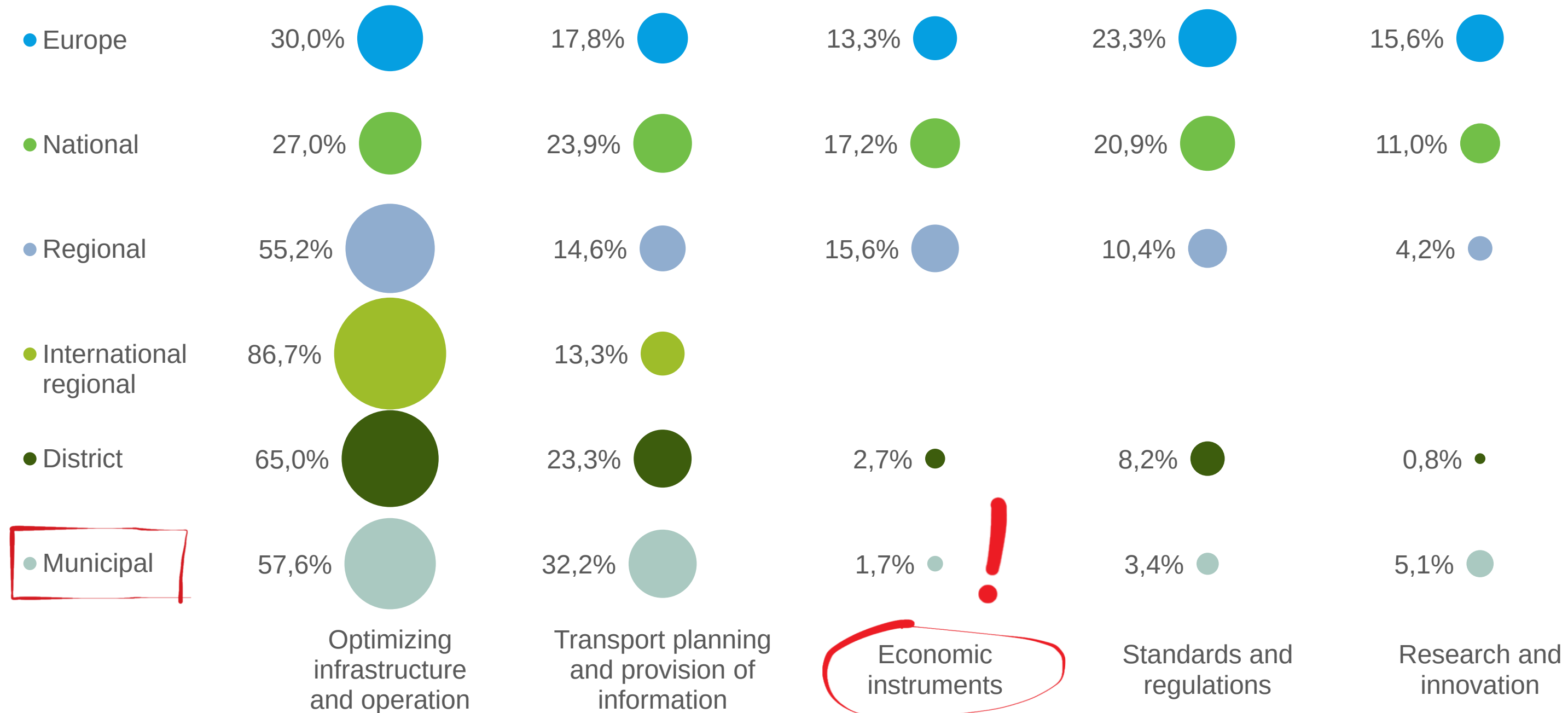
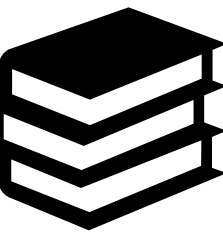
Policies

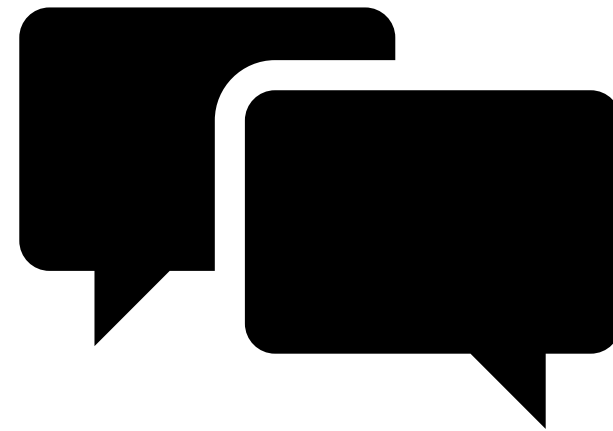
Relative distribution of mentions by administrative level



Instruments

Distribution of mentions by policy level





SURVEY ON URBAN TRANSPORT PLANNING

Scope of survey among urban planners

22 conducted interviews

France

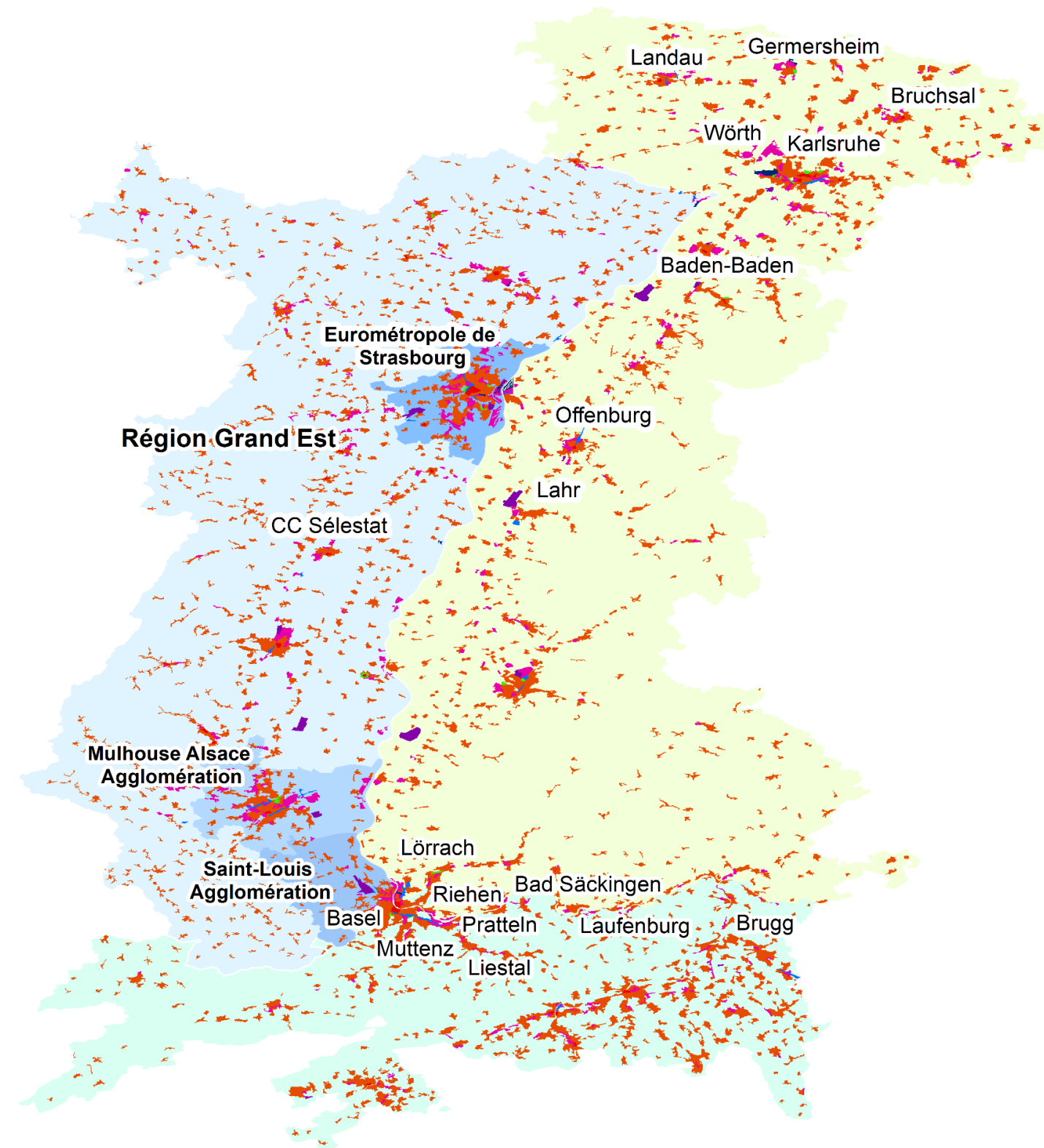
- Mulhouse Alsace Agglomération
- Région Grand Est
- Saint-Louis Agglomération
- Communauté de communes de Sélestat
- Eurométropole de Strasbourg

Germany

- Baden-Baden
- Bad Säckingen
- Bruchsal
- Germersheim
- Karlsruhe
- Lahr
- Landau
- Laufenburg
- Lörrach
- Offenburg
- Wörth

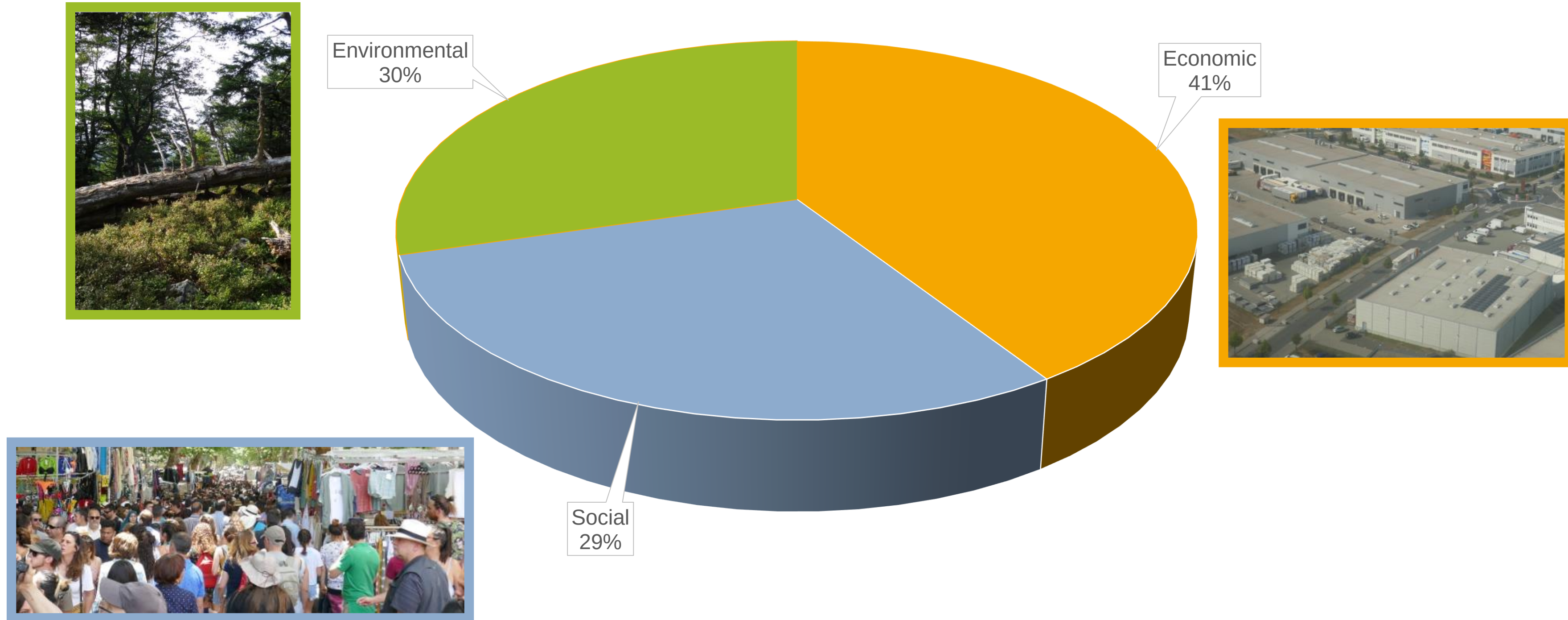
Switzerland

- Basel
- Brugg
- Liestal
- MuttENZ
- Pratteln
- Riehen



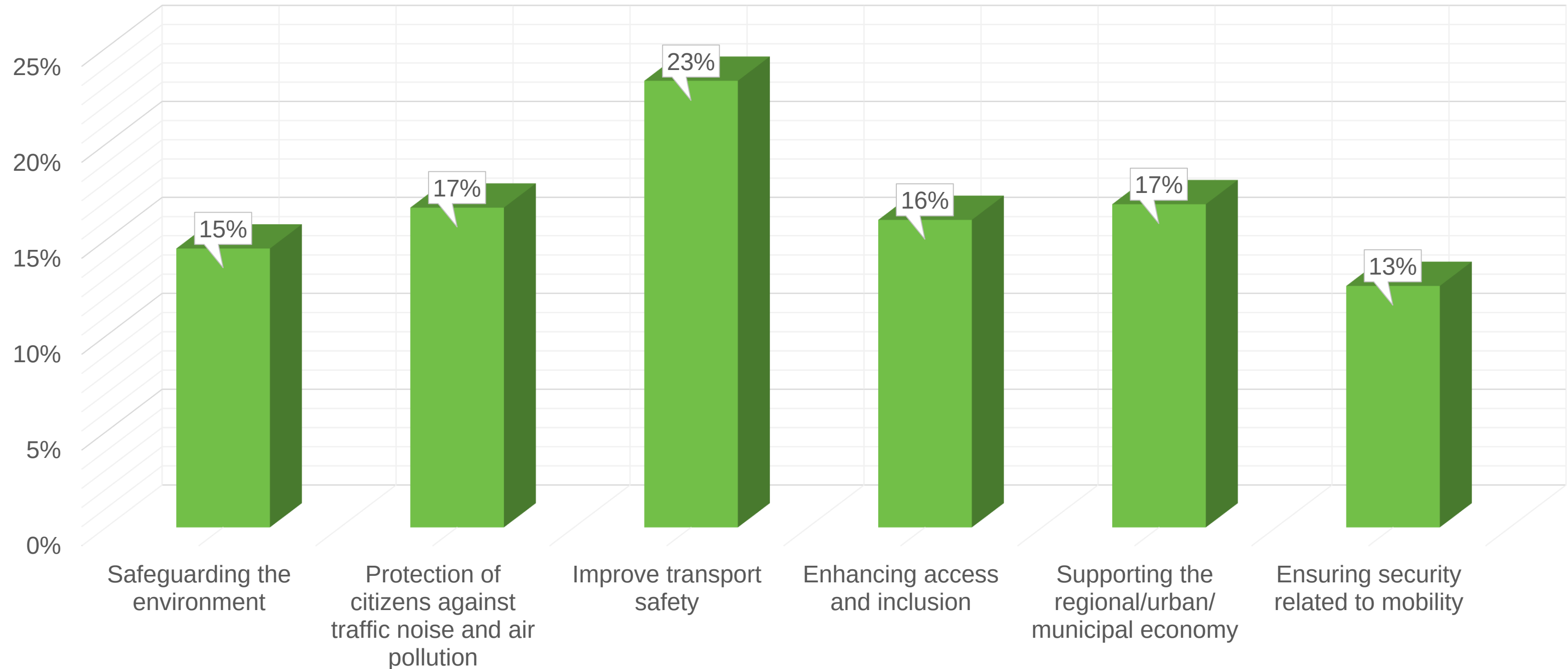
Importance of different sustainability aspects

Question: Which aspects are more important for urban mobility planning in your administrative district (pairwise comparisons)?



Importance of different aspects of urban mobility planning

Question: Which aspects are more important for urban mobility planning (pairwise comparisons)?



Risks associated with the implementation of emerging technologies



Question: Which risks associated with the implementation of emerging technologies and trends do you recognise?

- Societal aspects (12)
- Data related aspects (5)
- Transport specific aspects (5)
- Technology aspects (4)
- Infrastructural and urban space related aspects (4)
- Economic aspects (3)
- Financing aspects (3)

Personal data protection issues
Increased system complexity for users
Questionable economic viability of e-mobility
Carsharing increases the need for parking space and pollution
Lack of charging capacity for alternative propulsion technologies
Political resistance by lobbies
Financial risks
Extensive space occupation by bicycles
Misuse of personal data by GAFAMs

Higher attractivity of road transport due to autonom. vehicles

Missing willingness to change in society

Mobility increase due to high attractivity of e-mob.

Exclusion of elderly people

Lack of societal openness to technologies

Scepticism by citizens and decision makers

Change of the cityscape

Lack of qualified personnel
Need for IT systems and support due to massive data requirements

Lack of sufficient number of users to reach economic efficiency

Power grid not suitable for emobility
Volatile market structure due to disintermediation/ uberisation

Limited access to data (no open access)

Lack of technical interoperability

Lack of acceptance by society

Current key challenges regarding urban mobility

Question: Which are the current key challenges regarding urban transport planning?



Shift of road transport to ecomodes

Dealing with demand peaks during rush hours

Establishing/extending cross-border connections

Building facilities for cyclists (e.g. showers, locker rooms)

Integrating and promoting innovative mobility concepts

Dealing with uncertainty regarding future mobility behaviour

Need to plan and build new road infrastructure

Handling commercial traffic

Promoting acceptance of new technologies

Facilitating high level of accessibility of urban areas

Financing public transport

Handling barriers of PT infrastructure extension/ upgrade

Reducing individual motorized transport
Planning and operation of parking areas

Handling local traffic

Improvement of bicycle infra.

Dealing with transit traffic

Increase the LoS for PT

Reduction of air pollution and GHG emissions

Dealing with specific structural peculiarities of the city

Counteracting the decrease of PT use

Reducing the number of commuters on the road

Avoiding congestion Managing spatial constraints

Supporting active modes and multimodal transport

Creating awareness for sustainable mobility behaviour

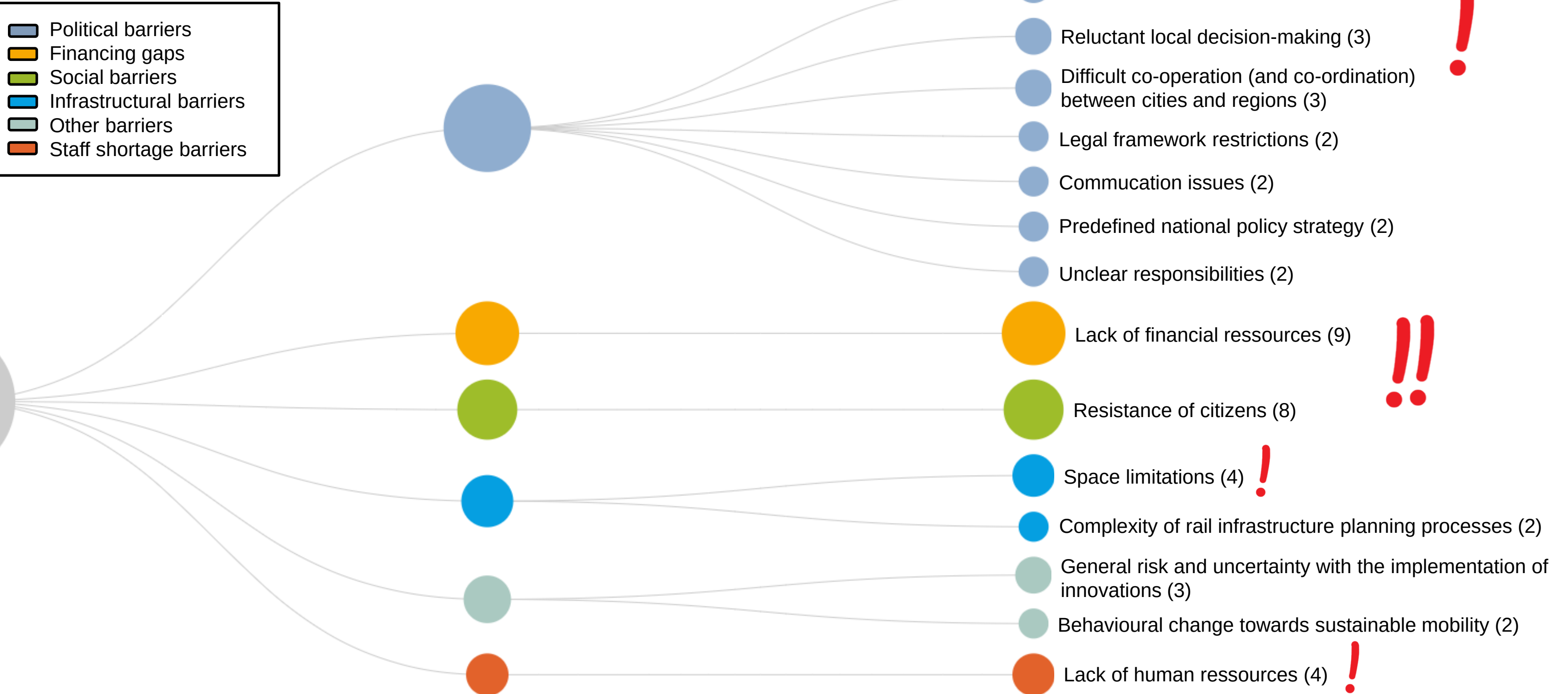
Implementing guidelines for climate protection

Connecting low-density areas to the PT system

	Public transport challenges (17)
	Road traffic challenges (16)
	General mobility challenges (10)
	Bicycle traffic challenges (10)
	Environmental challenges (5)
	Challenges of integration of spatial and transport planning (5)
	Social and societal challenges (3)

Barriers in urban transport planning

Question: What are the general barriers that hamper the solution of urban mobility challenges?



Policy measures and projects relating to cross-border aspects

Question: Are you developing any specific (mobility) policy measures or projects relating to cross-border aspects? If yes, which one(s)?



- Improvement of cross-border public transport (n=10)



- Improvement of conditions for cross-border road transport (parking, charging infrastructure, new bridges) (n=7)



- Extension of the cross-border cycling infrastructure (n=6)





CONCLUSIONS

Conclusions

Also under consideration of results of the SuMo-Rhine-Workshop on communal perspectives on sustainable mobility



Fundamental challenge: High and increasing complexity of urban transport planning

- Need to align conflicting interests of a large and increasing number of stakeholders
- Increasing number of technical interfaces to be considered (e.g., mobility data management, energy sector)
- Radical changes in (urban) mobility systems (sharing, electrification, automation, digitization), with high impact potential
- Urgent need to support climate protection goals
- Difficult planning and implementation processes

Conclusions



Also under consideration of results of the SuMo-Rhine-Workshop on communal perspectives on sustainable mobility

- Importance to involve citizens in decision-making processes (information, tools, test fields)
- Potential for more „avoid policies“, e.g. by supporting decentral urban/ regional structures to avoid motorized trips for daily mobility
 - Closer integration of transport planning and land-use planning/ urban planning
 - Space-saving land-use planning
- Potential to make wider use of economic instruments (while avoiding social imbalances)
- Exploit synergies between European/ national and municipal levels of transport planning (e. g., interfaces between TEN-T/ CEF corridors and municipal transport)
- Exploit experiences from best practice in the Upper Rhine Region and beyond
- Create synergies by making use of scientific expertise
- Strengthen the efforts to create a Green and Single Transport Area in the Upper Rhine Region

Thank you for your attention!

szimba@kit.edu



Funding Period
07/2018 –12/2021

Co-Funding Project Partners



Associated Partners



Networks





Commuting to work: it better be easy

Dr. Melanie Ströbel
Universität Koblenz-Landau

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



Background

Starting point: High emissions from transport

Focus: commute to work

- Understanding mode choice
- Understanding reasons for mode choice

Survey content

Main mode used for commute before Coronavirus crisis, in January 2021 and in September 2021

Awareness of environmental impact of driving

Personal and social norms regarding the environmental impact of different transport modes

Attitude towards different transport means (e.g. safety, flexibility, comfort)

Assessment of level of difficulty to use certain transport modes and of contextual factors

Corona virus-associated risk perception

Socio-demographic data (age, gender, income, place of residence/work)

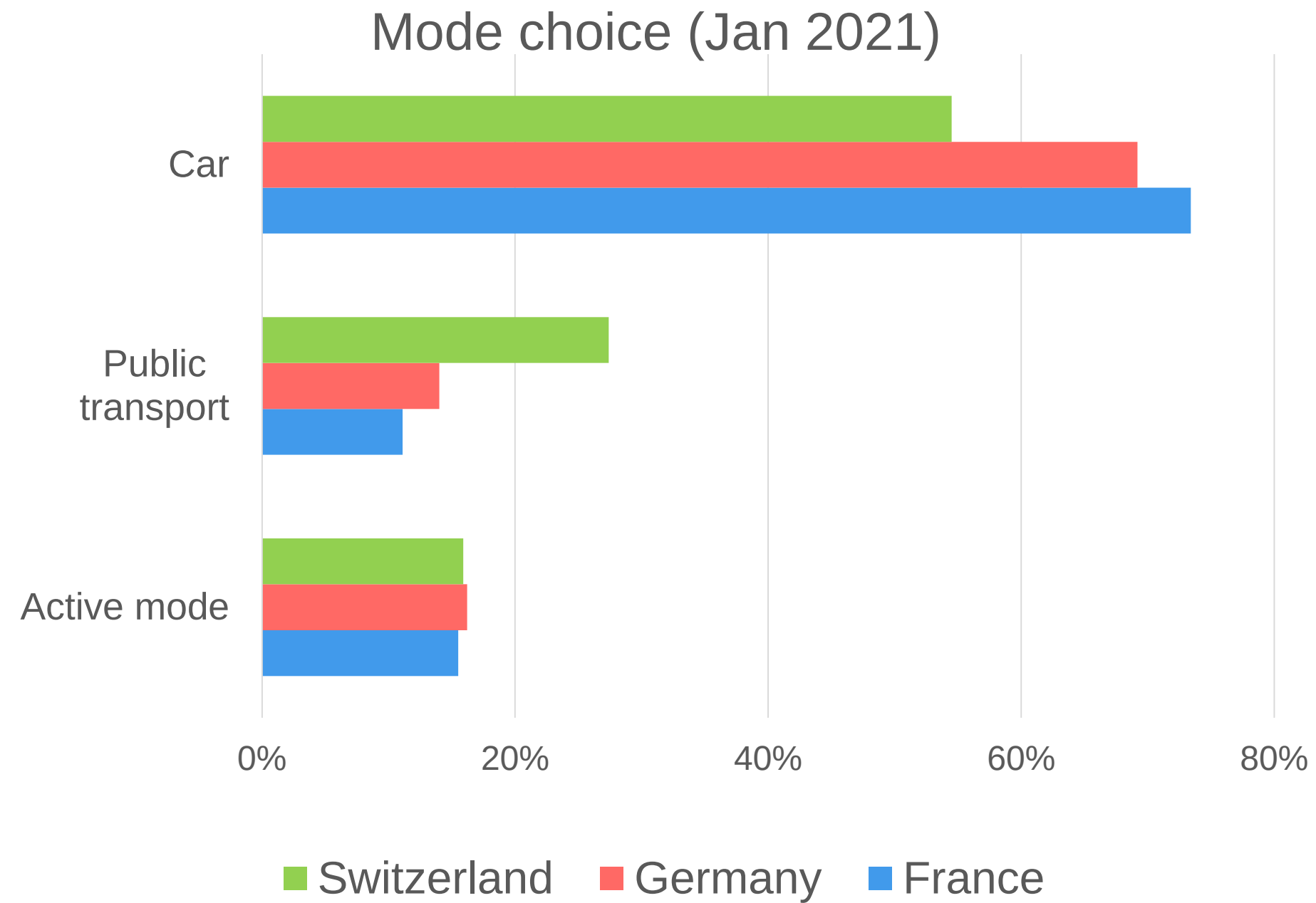
Survey

- Online survey using market research company

	Wave 1	Wave 2
Time frame	January 2021	September 2021
Duration	15-20min	ca 20min
Participants	ca 1.000	ca. 500
Country split		
France	37.6%	32.2%
Germany	21.9%	24.3%
Switzerland	40.5%	43.4%
Gender		
Male	38%	44%
Female	62%	56%

Survey is not representative for population in Upper Rhine region

Mode choice



Mode choice (car-public)

- Binary logistic regression -> tests effect on likelihood of choosing a binary outcome variable (car – public transport) in response to changes in independent variable

car-public transport	France			Germany			Switzerland		
	Regressions koeffizientB	Sig.	Exp(B)	Regressions koeffizientB	Sig.	Exp(B)	Regressions koeffizientB	Sig.	Exp(B)
Environmental awareness (comb.)	-0,267	0,690	0,766	1,318	0,074	3,737	0,355	0,289	1,426
Personal norm - environmental considerations	-0,318	0,543	0,727	-1,038	0,195	0,354	-0,384	0,164	0,681
Social norms environmental consideration	-0,694	0,148	0,499	0,813	0,173	2,254	0,006	0,848	1,006
Difficulty of using car	1,433	0,000	4,190	1,572	0,014	4,817	1,597	0,000	4,937
Difficulty of using public transport	-2,001	0,000	0,135	-2,599	0,001	0,074	-0,863	0,000	0,422
Difficulty of using bike	0,418	0,261	1,519	1,001	0,071	2,722	-0,082	0,747	0,921
Difficulty of walking	0,293	0,383	1,340	-1,006	0,150	0,366	-0,028	0,921	0,972
Age group	0,465	0,176	1,592	0,542	0,367	1,720	-0,207	0,326	0,813
Size town of residence	0,098	0,043	1,103	0,410	0,336	1,507	-0,290	0,192	0,748
Size town of work	-0,683	0,118	0,505	-0,848	0,170	0,428	-0,651	0,003	0,522
Gender(1)	-0,887	0,406	0,412	-1,520	0,293	0,219	-0,057	0,904	0,944
Household income	0,078	0,680	1,081	-0,281	0,188	0,755	0,015	0,800	1,015
Konstante	0,234	0,923	1,264	0,262	0,962	1,300	2,663	0,093	14,333

Key outcomes

- More difficult to use car -> more likely to use public transport
- More difficult to use public transport -> less likely to use public transport
- France: smaller place of residence -> more likely to use public transport
- Switzerland: smaller place of work -> less likely to use public transport

Mode choice (car-active)

- More significant factors

car-active mode	France			Germany			Switzerland		
	Regressions koeffizientB	Sig.	Exp(B)	Regressions koeffizientB	Sig.	Exp(B)	Regressions koeffizientB	Sig.	Exp(B)
Environmental awareness (comb.)	0,313	0,529	1,367	-0,145	0,817	0,865	-0,022	0,951	0,978
Personal norm - environmental considerations	-0,860	0,017	0,423	-0,807	0,241	0,446	-0,182	0,549	0,833
Social norms environmental consideration	0,015	0,873	1,015	-0,668	0,233	0,513	0,041	0,591	1,042
Difficulty of using car	1,581	0,000	4,859	2,077	0,003	7,978	2,133	0,000	8,443
Difficulty of using public transport	0,096	0,739	1,101	-0,719	0,110	0,487	-0,327	0,171	0,721
Difficulty of using bike	-1,346	0,001	0,260	-1,744	0,038	0,175	-1,725	0,000	0,178
Difficulty of walking	-0,882	0,002	0,414	-1,391	0,002	0,249	-0,084	0,702	0,920
Age group	0,017	0,955	1,017	0,804	0,167	2,235	-0,181	0,471	0,834
Size town of residence	0,029	0,924	1,029	-0,306	0,652	0,736	0,261	0,326	1,299
Size town of work	0,243	0,441	1,275	-0,784	0,234	0,456	0,011	0,659	1,011
Gender(1)	2,569	0,003	13,051	-0,168	0,857	0,846	1,334	0,037	3,795
Household income	-0,427	0,039	0,652	0,106	0,559	1,111	-0,087	0,277	0,917
Konstante	2,199	0,336	9,018	7,580	0,048	1958,081	1,107	0,573	3,026

Key outcomes

- More difficult to use car -> more likely to use active mode
- More difficult to cycle -> less likely to use active mode
- More difficult to walk -> less likely to use active mode
- F: less agreement with statement 'Due to my moral norms and values, I feel obliged to include environmental considerations into my mode choice for my commute to work' -> less likely to use active mode
- F: Higher income -> less likely to use active modes
- F/CH: Male participants -> more likely to use active modes

What does difficulty to use a mode mean?

Key outcomes

- Several factors influence perception of how easy or difficult the use of a certain mode is
- Medium effect for:
 - Car availability and availability of parking spaces and perception of car use
 - public transport connection and perception of public transport use
 - Suitability of route for cycling and perception of cycling
- Link between distance for biking and walking and perception of biking and walking

	Difficulty to use...			
	car	public transport	bike	walk
	Cramer's V	Cramer's V	Cramer's V	Cramer's V
Car availability	0,350**	0,227**	0,193**	0,198**
Bike availability	0,085**	0,138**	0,284**	0,140**
Availability of parking spaces	0,337**	0,224**	0,119**	0,145**
Traffic delays	0,249**	0,127**	0,096*	0,099*
Suitability for cycling	0,102*	0,124**	0,357**	0,253**
Public transport connection	0,234**	0,435**	0,135**	0,135**
	car	public transport	bike	walk
	Kendall's tau-c	Kendall's tau-c	Kendall's tau-c	Kendall's tau-c
Transporting people or things	0,046*	-0,080**	0,011	0,016
Distance for biking	0,127**	-0,084**	-0,599**	-0,385**
Distance for walking	0,142**	-0,066**	-0,380**	-0,443**
*Correlation is significant at the 0.05 level				
**Correlation is significant at the 0.01 level				

-> many contextual factors are linked with whether mode use is perceived to be easy or difficult

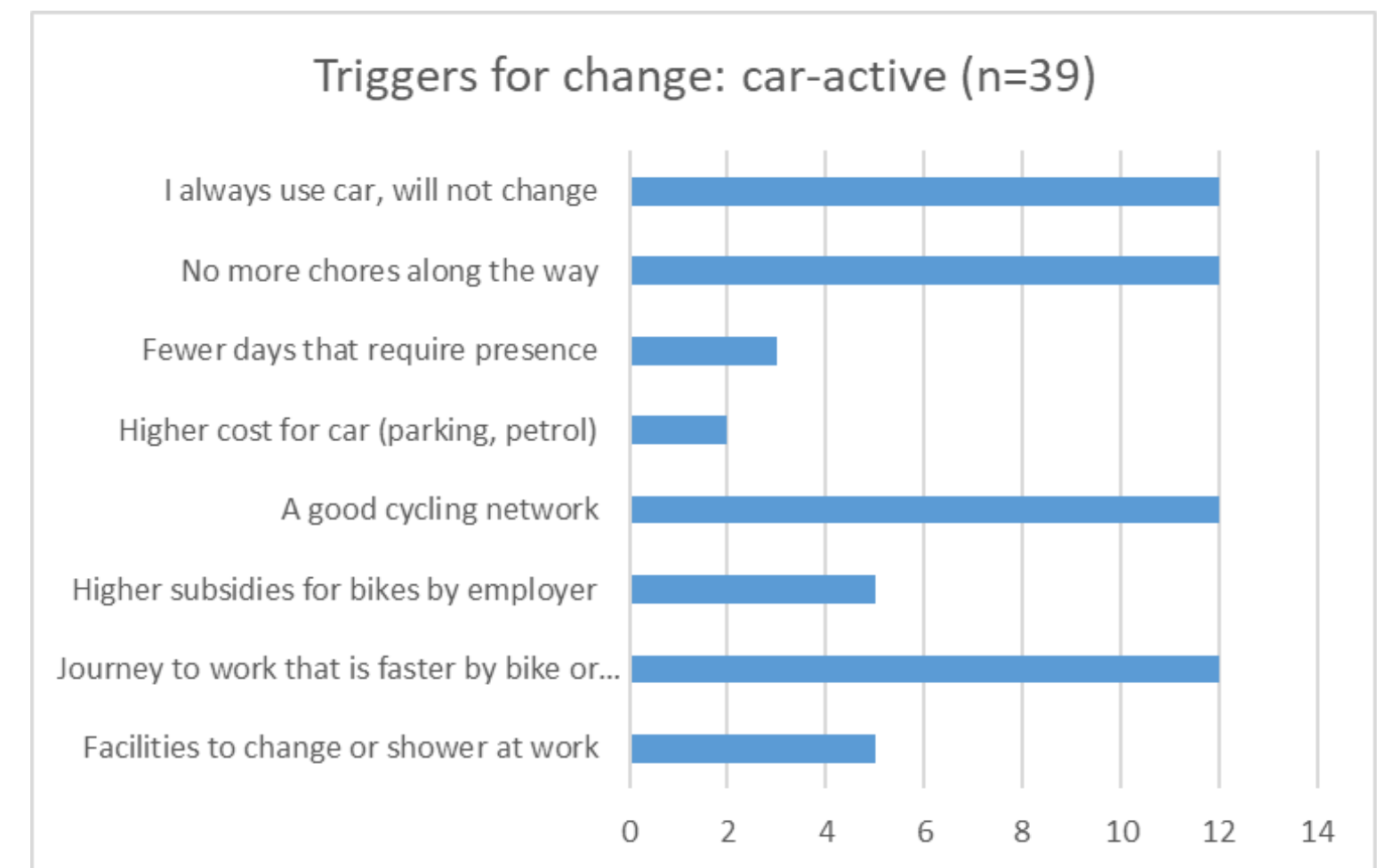
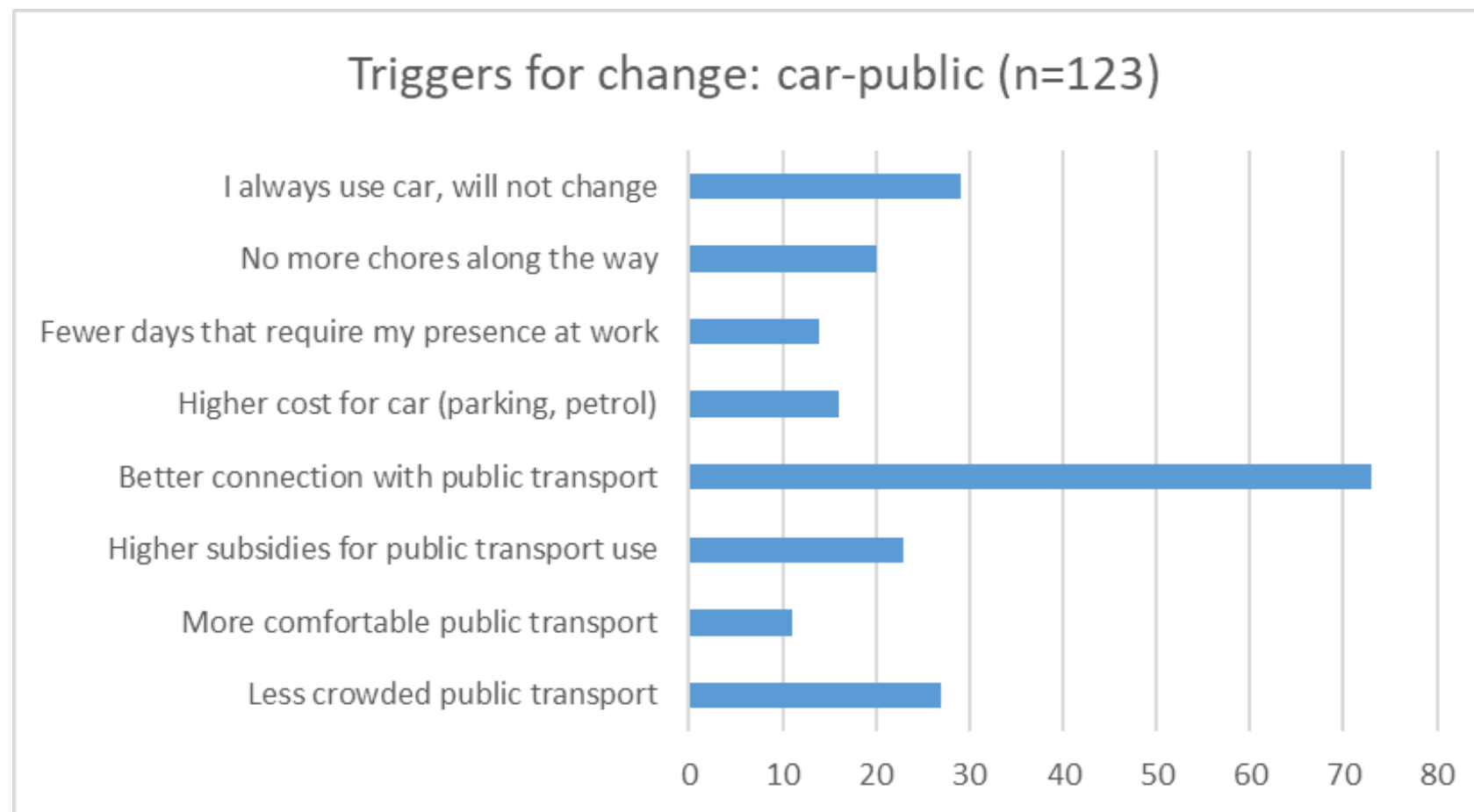
medium effect strength
low effect strength

-> national differences must be expected

	mean value agreement		
	scale: 1 (totally agree) -5 (totally disagree)		
	France	Germany	Switzerland
Suitability of journey for cycling	3,37	2,8	2,86

Triggers for shift from car to public and car to active modes

- Question asked: What would motivate you to shift from the car to public transport/active modes on your way to work?



Thank you!

ströbel@uni-landau.de



Funding Period
07/2018 – 12/2021

Co-Funding Project Partners

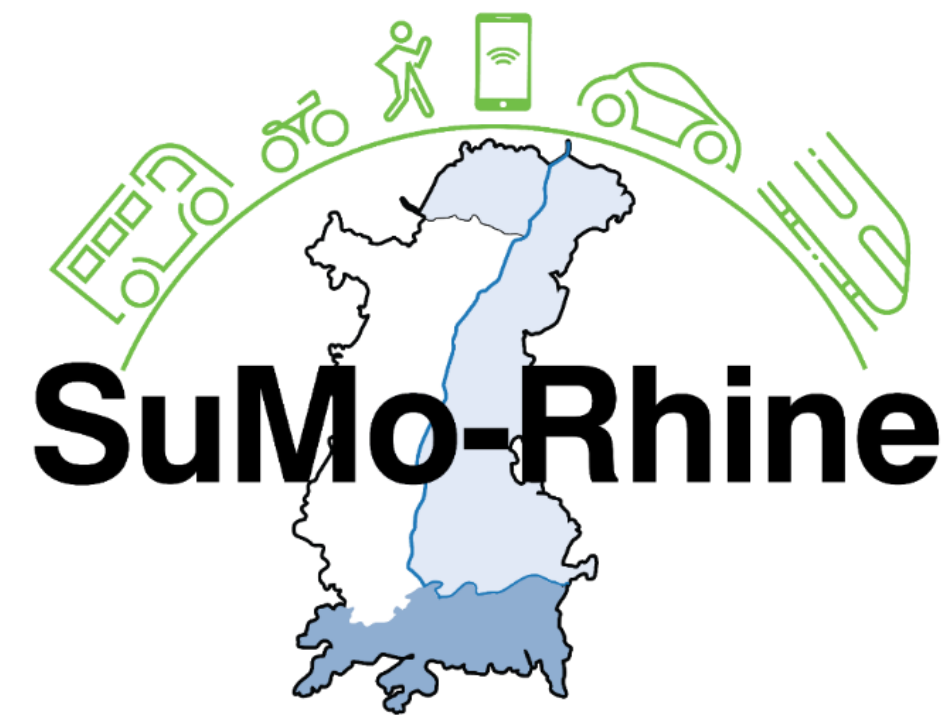


Associated Partners



Networks





Sustainable Mobility in the Upper Rhine Region

Janusch Vanja-Jehle
FeLis, Universität Freiburg

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



Measure the State of Sustainable Mobility

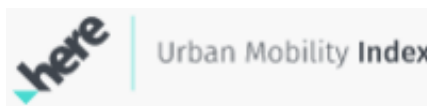
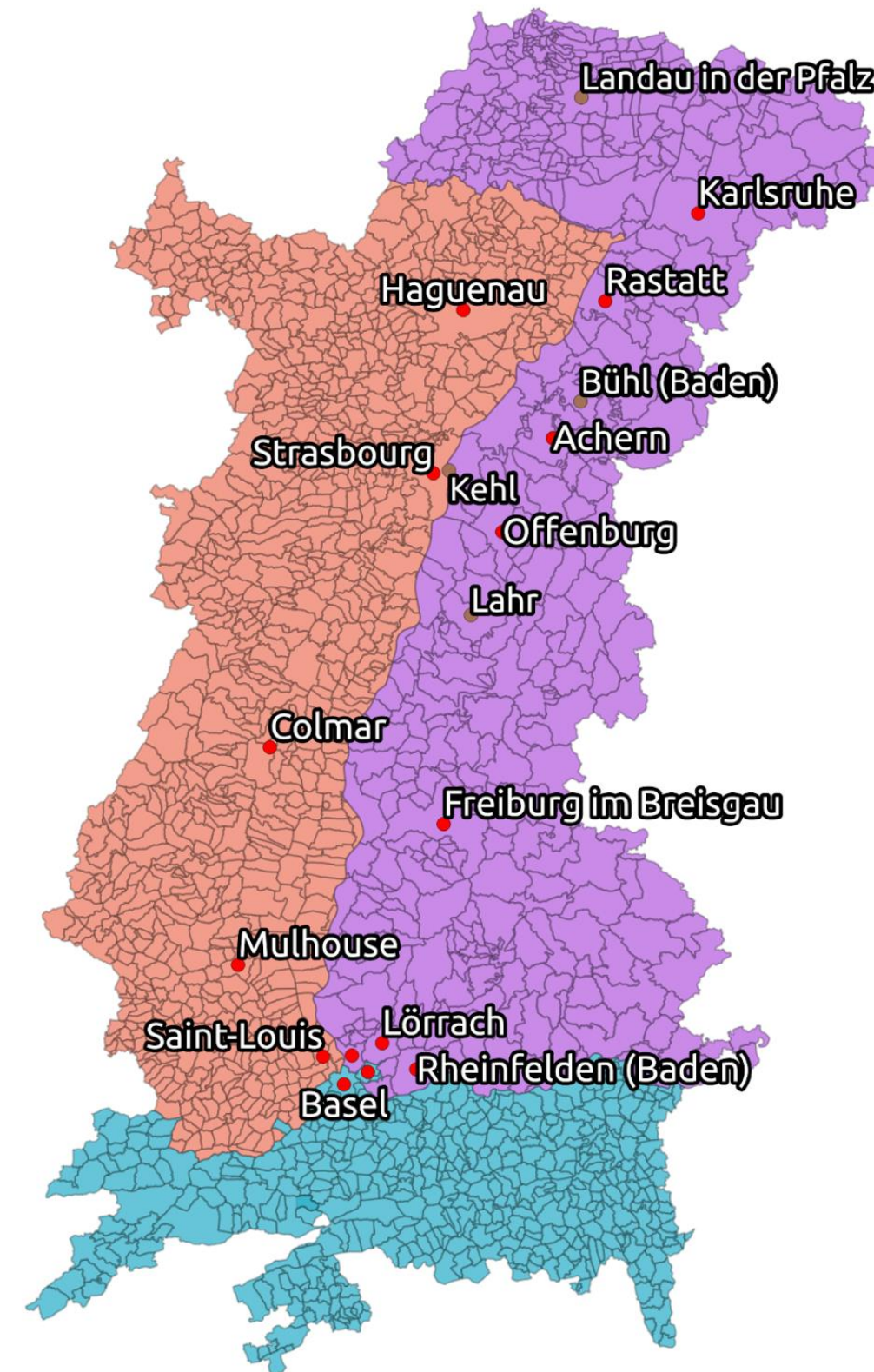
Objective:

Making sustainable mobility measurable, visible and comparable at municipal level providing mobility indicators.

- Support a smart and participative transition towards sustainable mobility
- Provide local data-driven insights to support interests of various stakeholders
 - Social Inclusion
 - Traffic Safety
 - Noise and Pollution
 - Walkability and Bikeability
 - Sustainability and Climate Change

Motivation:

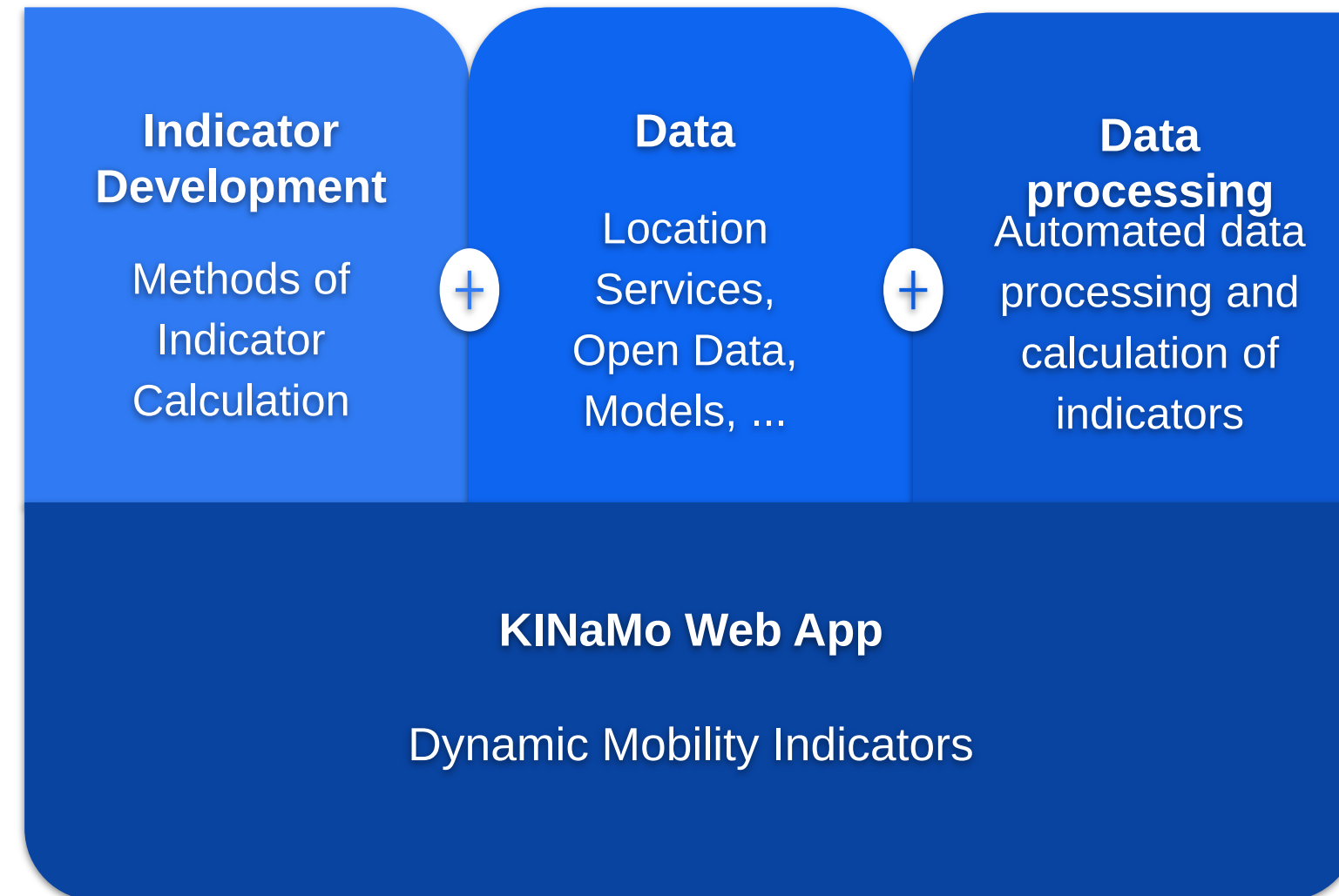
- Existing mobility Indicators
 - Methodological tools
 - Limited coverage



From Indicators to Information Service

Data-driven indicator system as an online information service

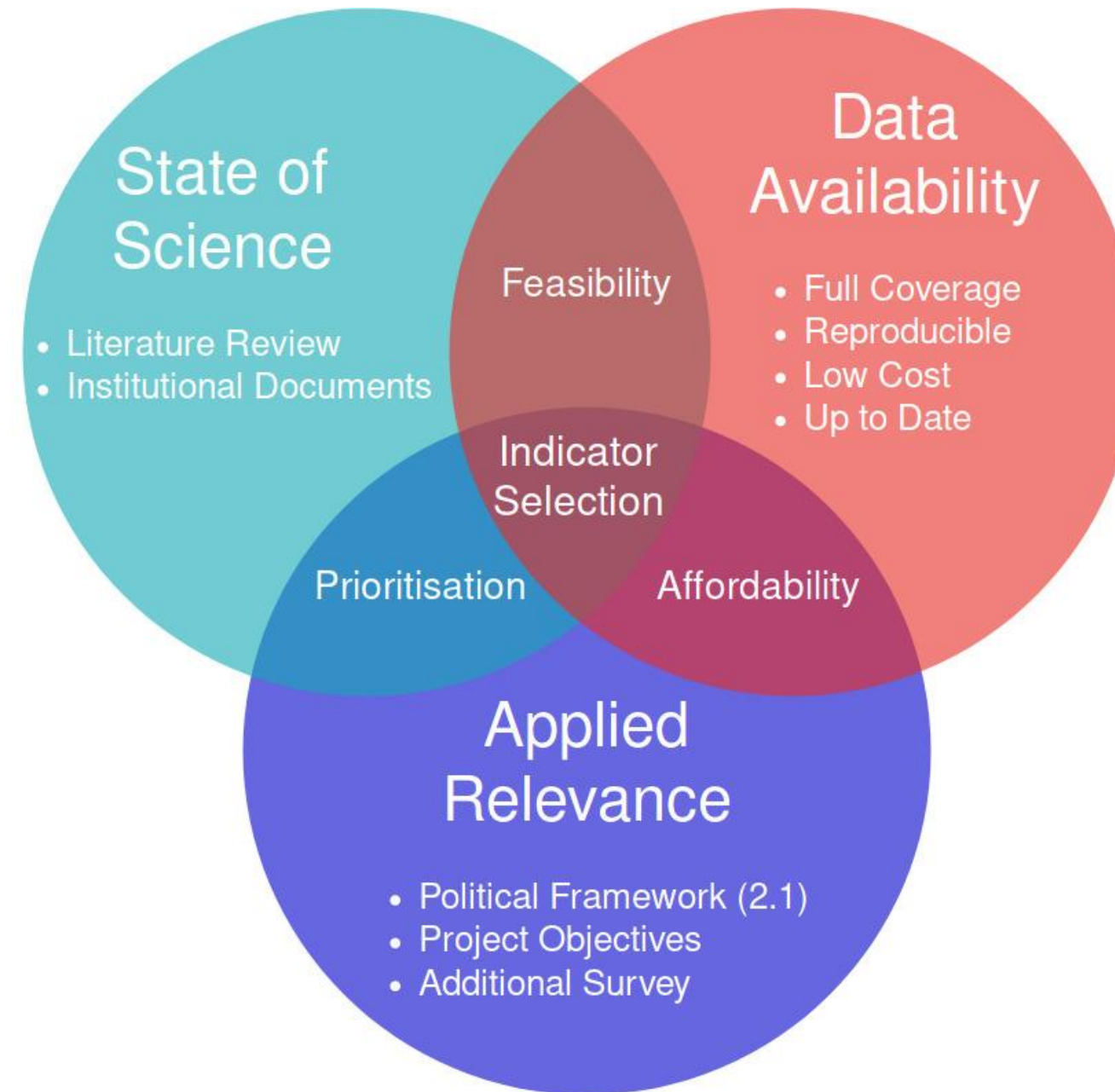
- Based on Location Services
 - Cost-effective
 - Scalable
 - Comparable and transparent
- Solution for international context of the Upper Rhine Region
- Intercommunal comparison and transparency
 - Identification of specific areas of action
 - Information on sustainable mobility at municipal level

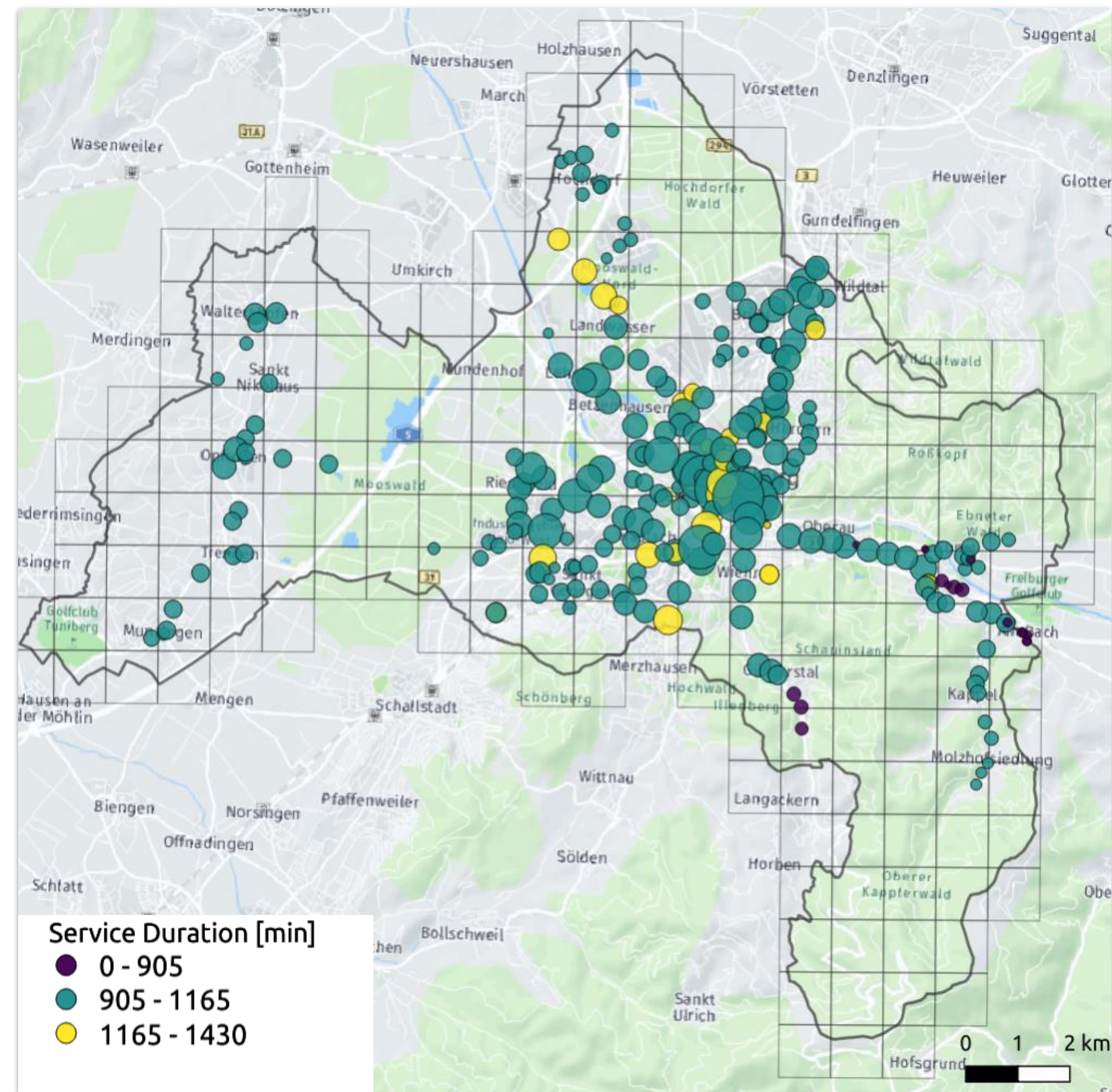
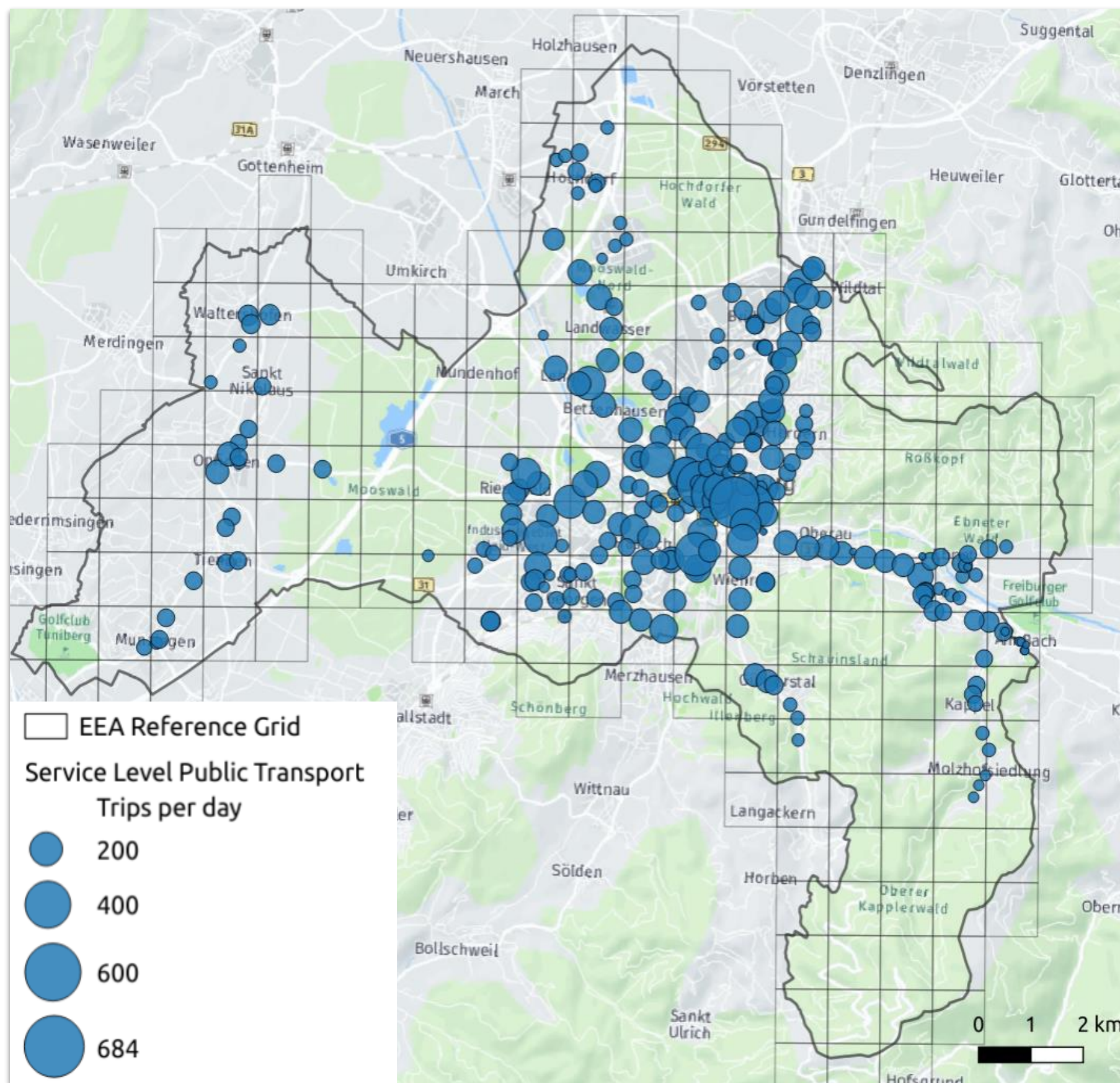


Indicator Development

Indicator development based on:

- State of science
 - Literature review
- Relevance for stakeholders
 - Political objectives
- Feasibility / affordability
 - Data availability





Thank you for your attention!

janusch.jehle@felis.uni-
freiburg.de



Funding Period
07/2018 – 06/2021

Co-Funding Project Partners



Associated Partners



Networks



QUESTIONS ET RÉPONES //

FRAGEN UND ANTWORTEN



**PAUSE-CAFÉ
(15 MIN)**

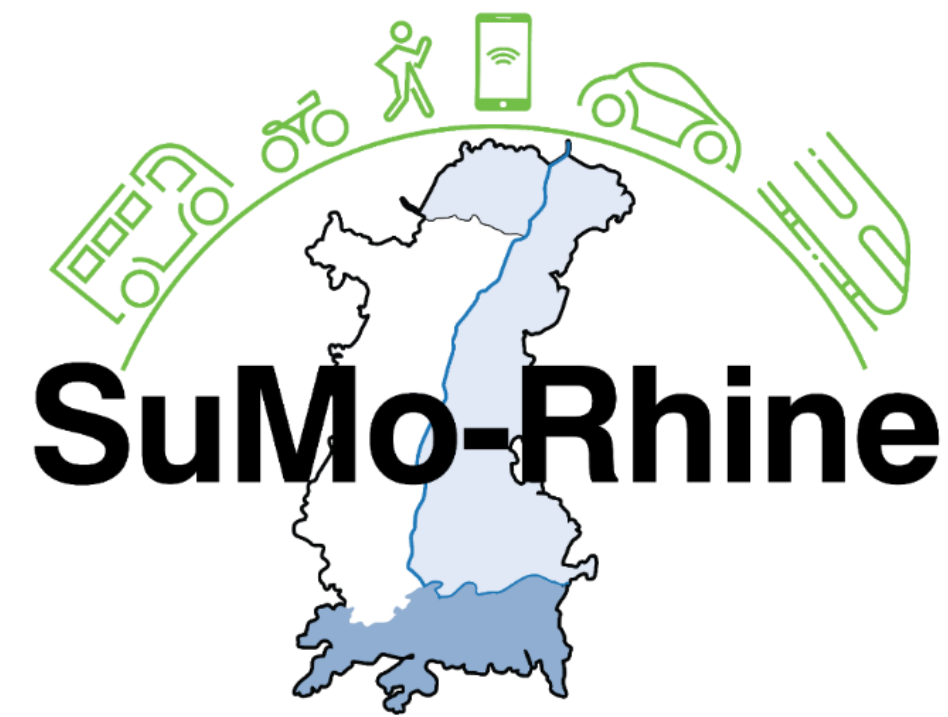


**KAFFEPAUSE
(15 MIN)**



Présentation des résultats du projet // Vorstellung der Projektergebnisse (2/2)

**CNRS, LIVE-UNISTRA, UHA
LIVE-UNISTRA, UNIVERSITÉ DE FRIBOURG & VILLE DE
LÖRRACH
ENSAS**



Sustainable Mobility in the Upper Rhine Region

Nadège Blond et al. (coord. Task 2.6)
Laboratoire Image Ville Environnement
CNRS / University of Strasbourg

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



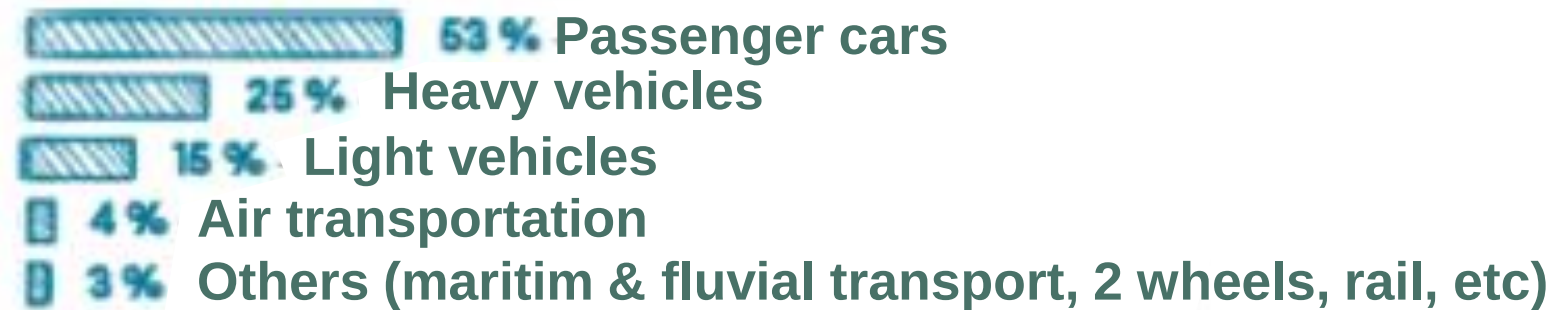
A very tricky context

Climate change < 1.5°C = ~ No GES emissions in 2050 (30 years!)



GES EMISSIONS - France (Citepa, 2019)

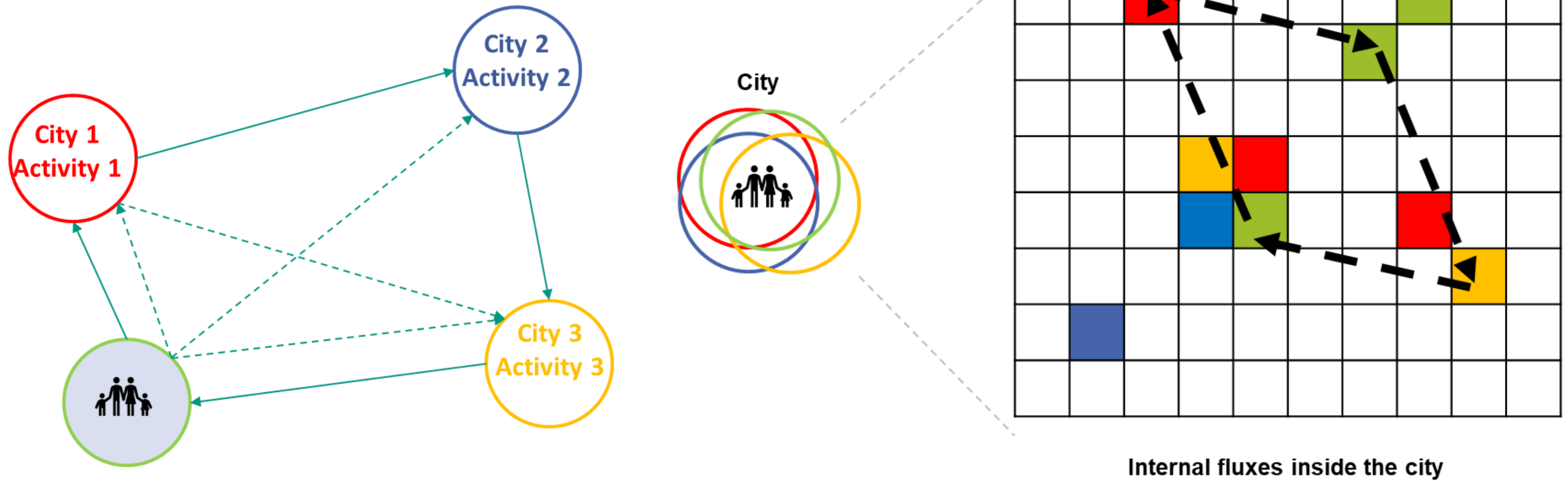
Transports = 136 Mt éqCO₂



We need to transform **our mobility systems**
The transportation sector is not the only sector concerned !

Example : Rapid development of electrical vehicles
Reduce our energy consumption.

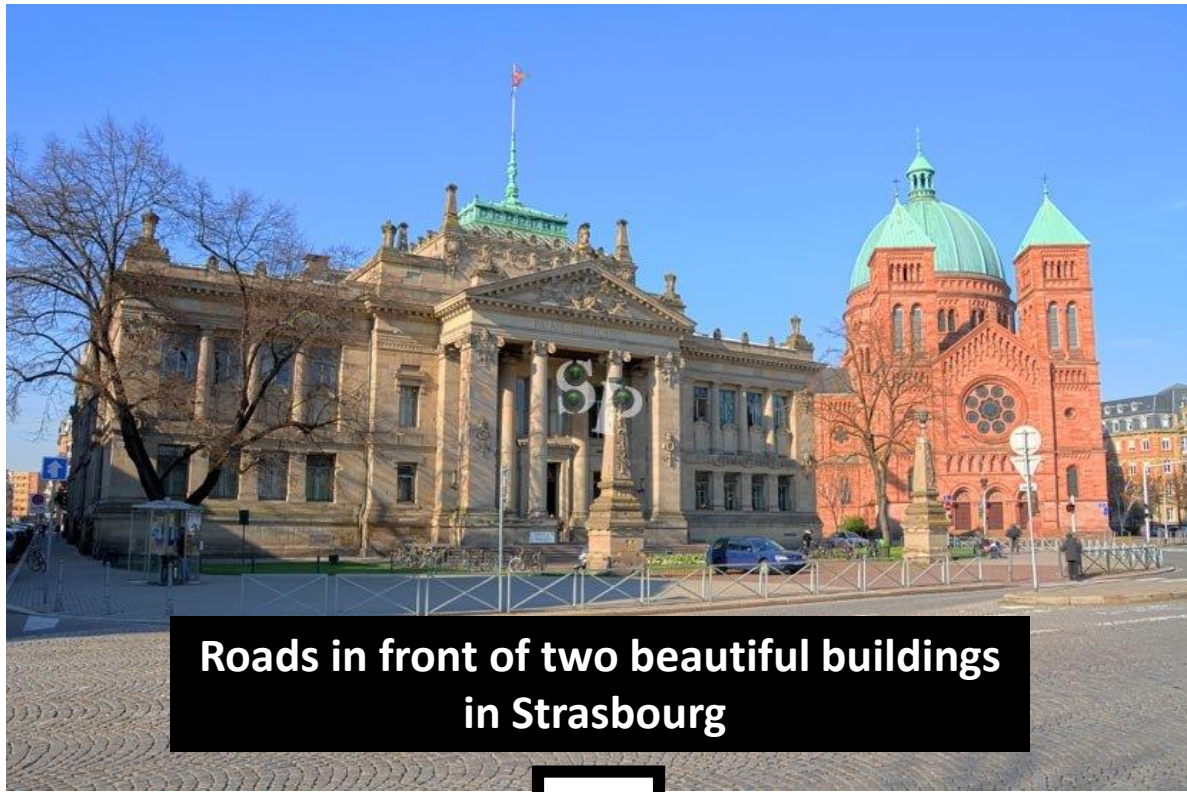
Mobility systems & territory planning



Life territory : complex systems

- (1) Strong links between **territory planning** and mobility
- (2) **Many actors** involved with different visions and wishes (urban planners, companies, associations, individuals, etc)
- (3) Unexpected behaviors : An individual **takes decisions** among the propositions

= Complex relations with **uncertain impacts** ...



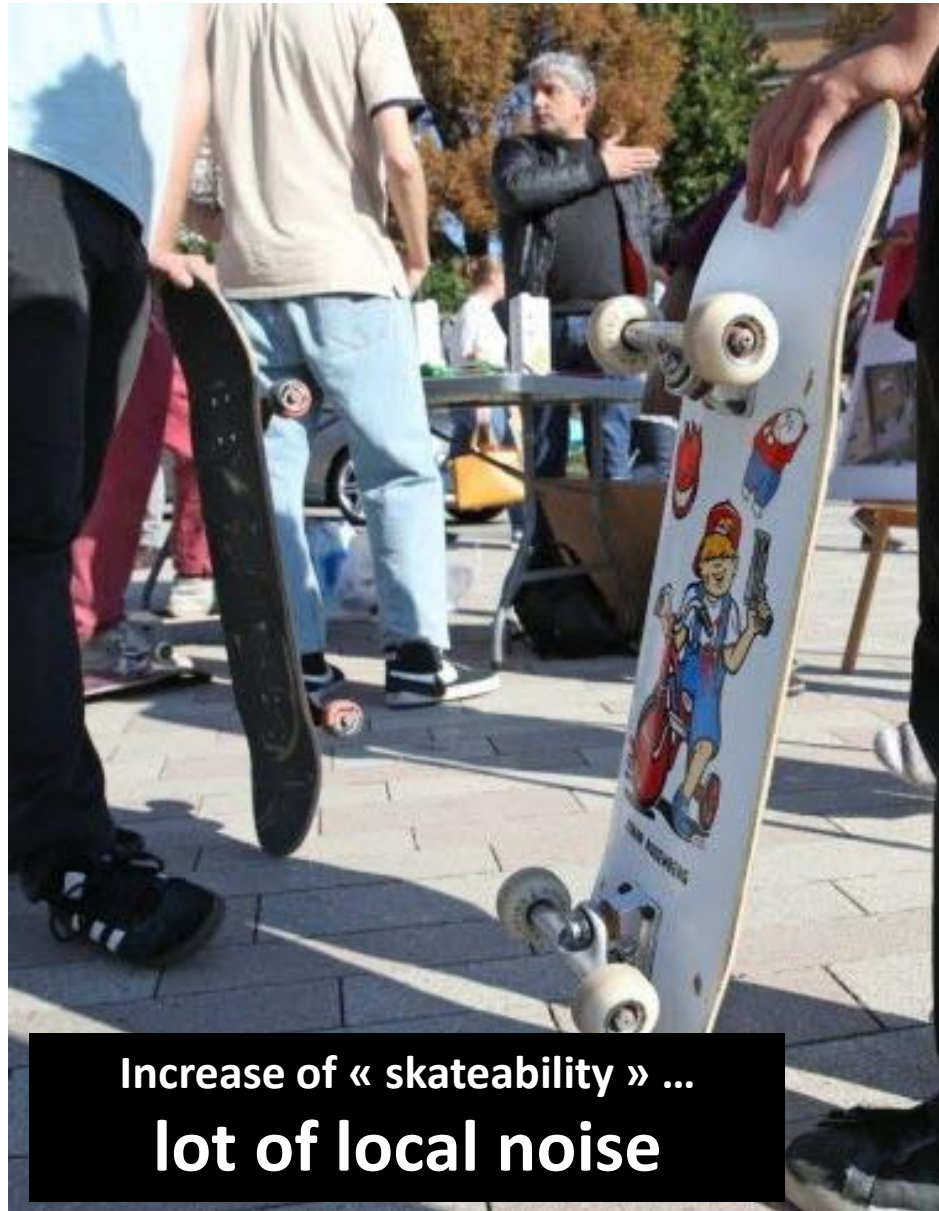
Roads in front of two beautiful buildings in Strasbourg



A place with an increase of walkability, bikeability, still open for car but with low speed

Examples

Increase of fuel prices



Increase of « skateability » ...
lot of local noise

COVID-19



More bikes, less people in the collective transport

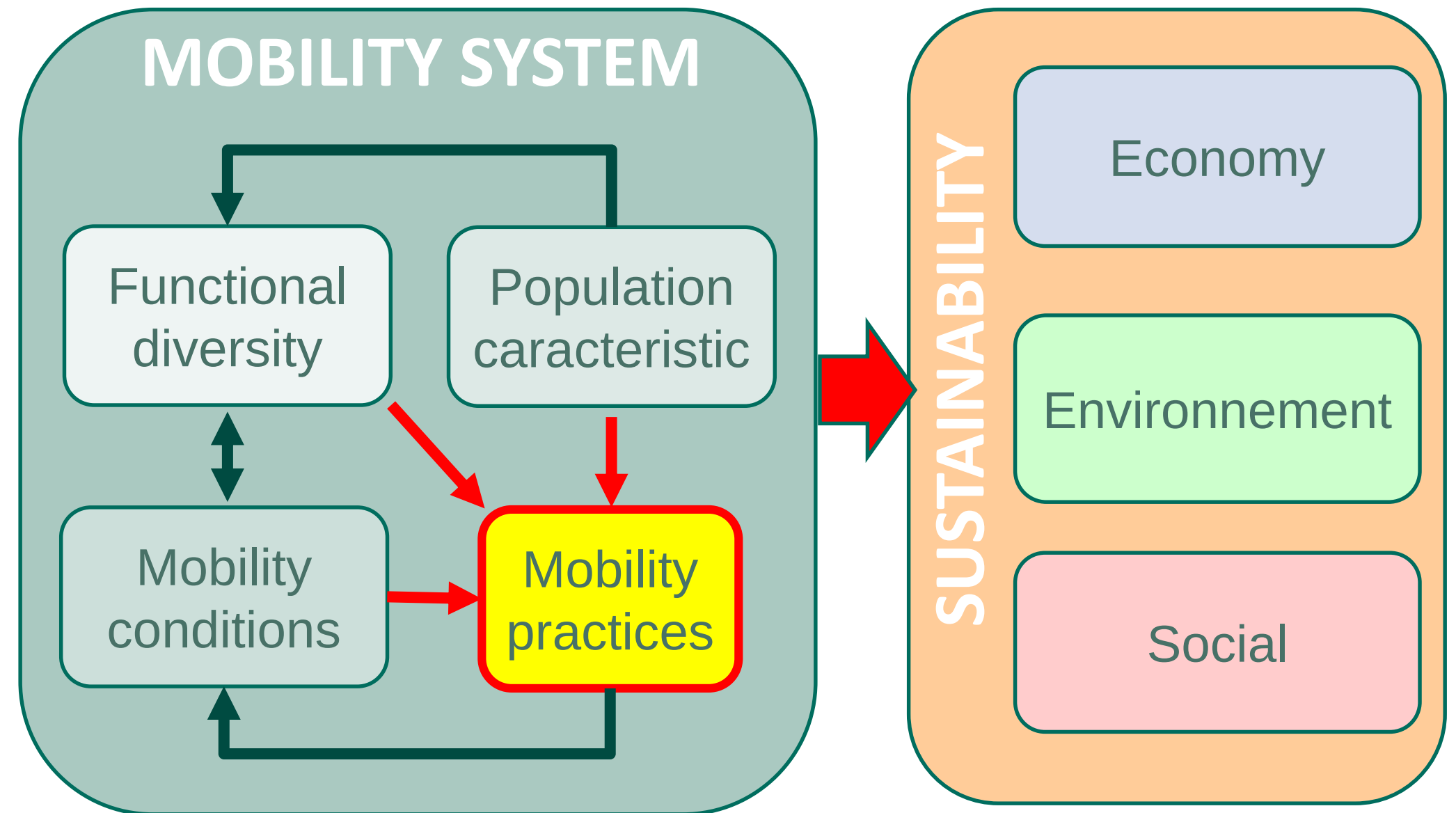
Local fonctionnal diversity, Mobility conditions, population characteristics + external factors influence modal decisions and mobility flows

Modelling urban mobility to support applications of the indicator system

Objectives : Support urban planning

⇒ Make the links between several components of the mobility systems and the impacts / **Evaluate urban planning scenarios**

⇒ Allow the evaluation of the **role of communications** on mobility monitoring in a near future



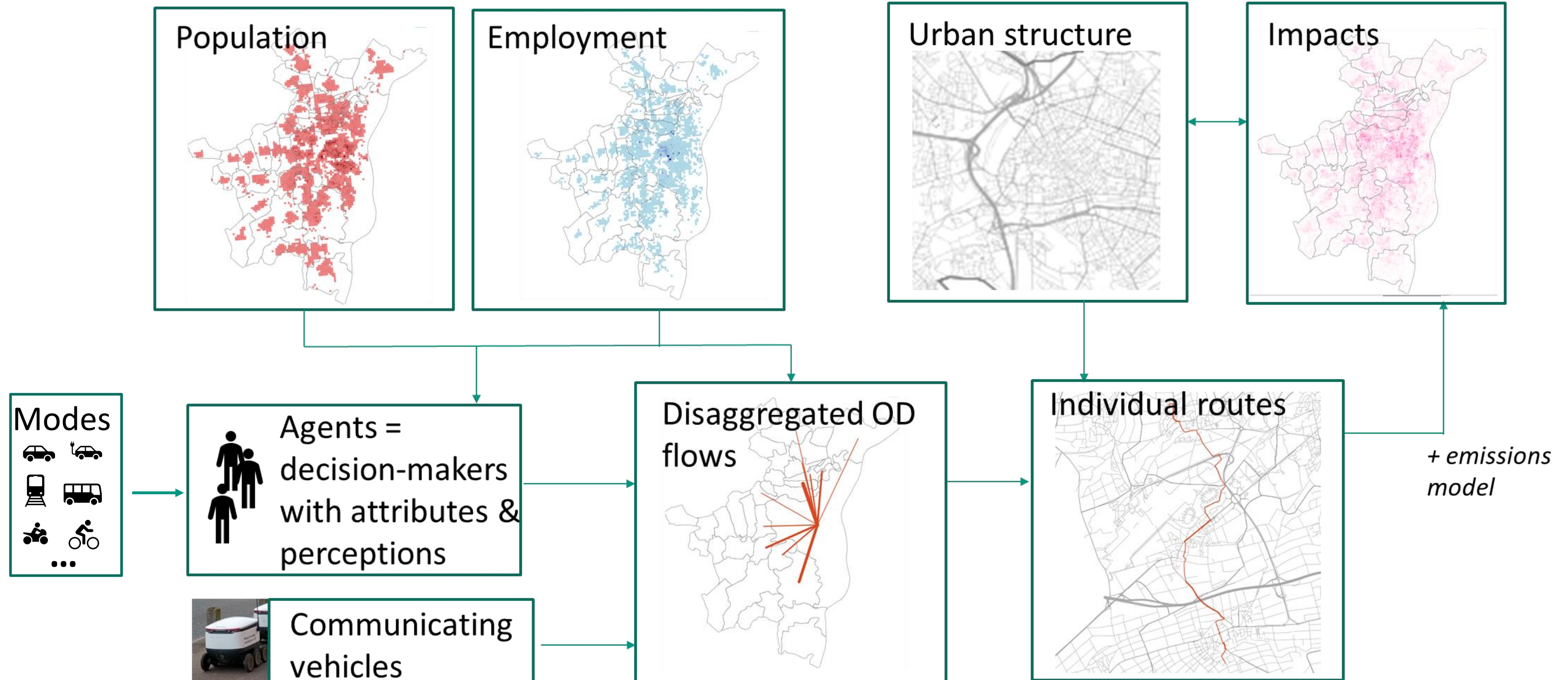
Two tools developed :

- **City scale** : Agent Based Simulation of Urban Mobility (ABSUM)
- **Neighborhood scale** : The Realistic Urban Mobility Communication (RUMCO)

ABSUM model – Agent-Based Simulation of Urban Mobility

Disaggregation of Census data

Networks + land-use data



Why ABSUM model ?

- **Take into account heterogeneity of behavior / evaluation of vulnerabilities**

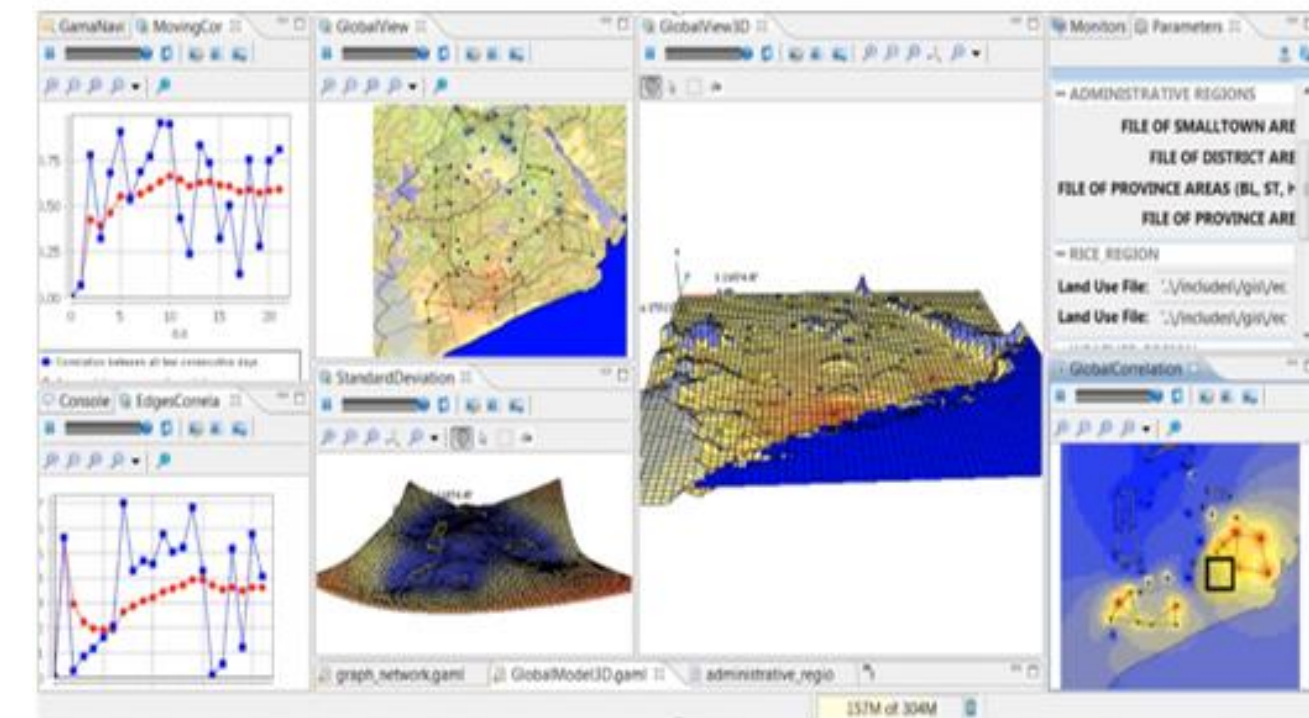
- Simulate possible behavioral changes (from scenarios)
- Identify the conditions of vulnerabilities / find solutions to reduce them

➡ Disaggregated approach

<http://gama-platform.org>

- **Develop a probabilistic / transferable model**

- Probabilistic approach / Uncertainties
- Spatial and temporal transferability / Data availability
- Control of all the design and parameterisation



RUMCO - The Realistic Urban Mobility Communication model

Indicators are related to the freshness of their sourcing information. The fresher the information the more accurate is the monitoring.



In a near future Smart cities with Internet of Things and vehicular communication will make **mobility-related information ubiquitous** (*available everywhere, every time*).

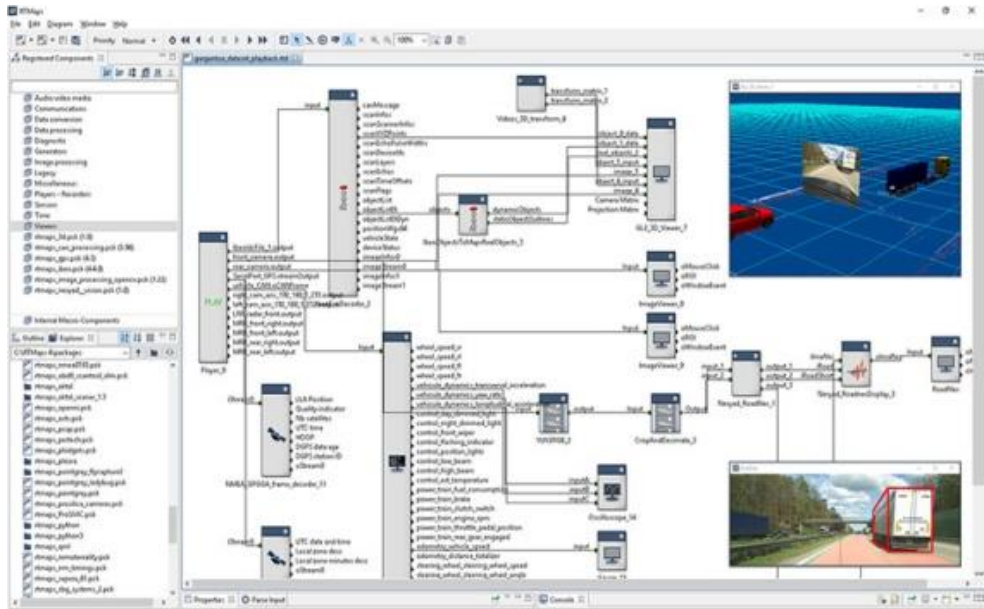
How can communication capabilities help to reach sustainability in urban mobility?

Software tooling approach

Requires an appropriate **simulation software framework** with communication capabilities (**missing today**).

RUMCO software framework

Vehicle emulation



Analyses the vehicle environment

RTMaps steers the vehicles in a scene according to the sensors' information provided by Carla (provides a sensors related *vision* of the moving environment).

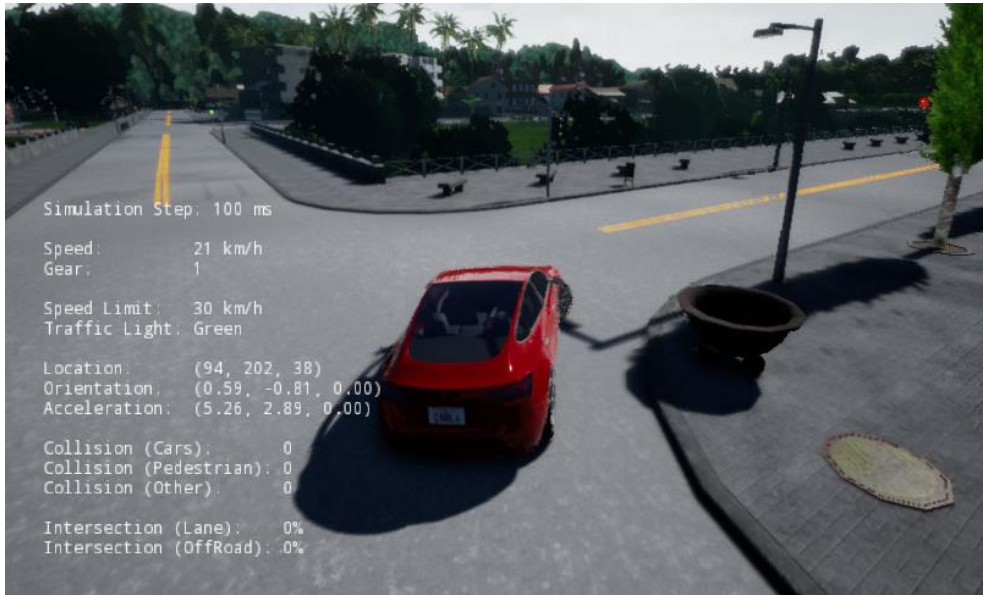
Steering wheel angle,
Acceleration pedal angle



Speed, GPS position,
camera ...



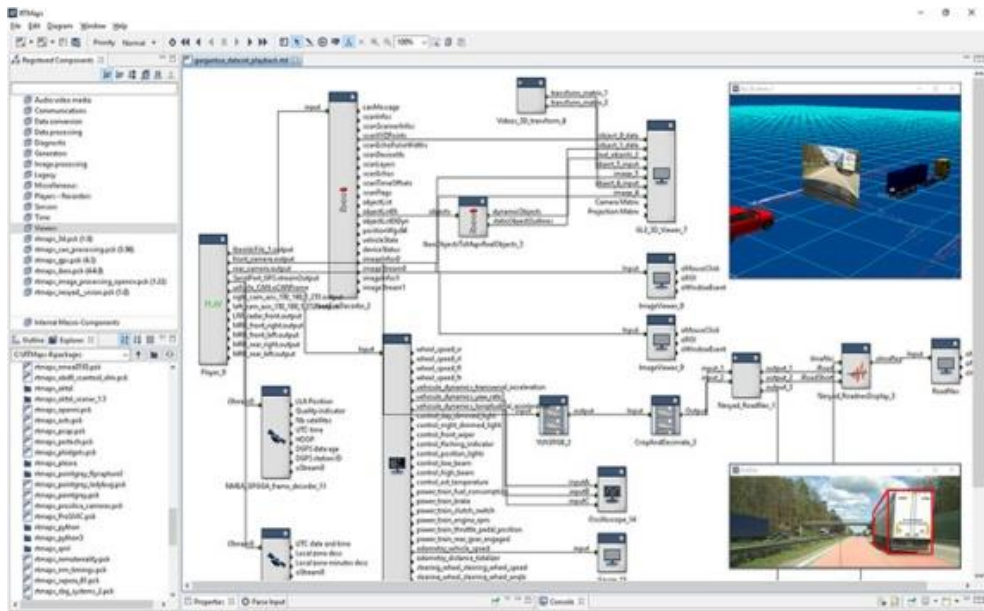
Provides a realistic environment



CARLA simulates vehicular motion in a simulated *realistic* environment, and provides sensors (positions, speed, camera, ...) based feedback accordingly.

RUMCO software framework

Vehicle emulation



Analyses the vehicle environment

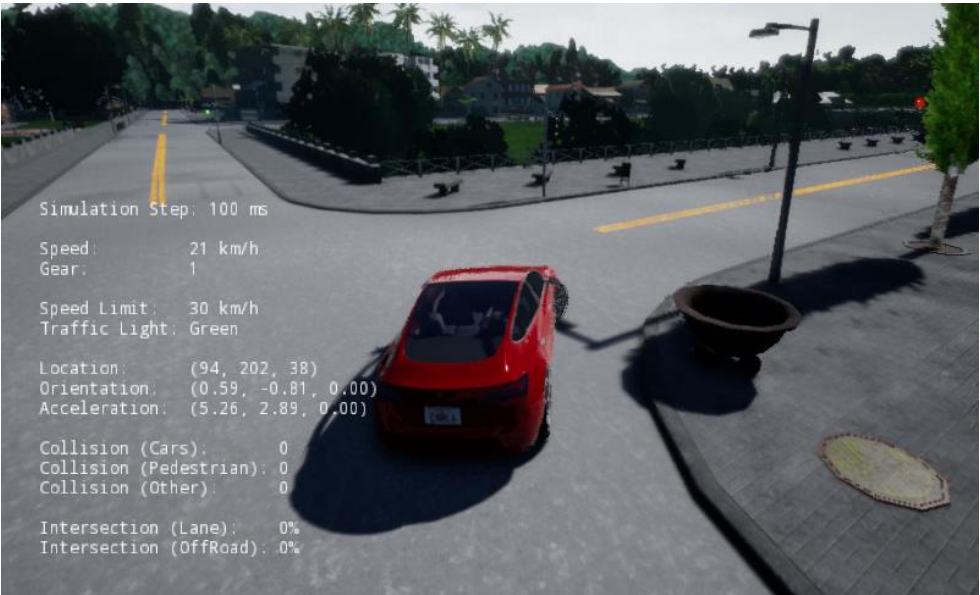
Steering wheel angle,
Acceleration pedal angle



Speed, GPS position,
camera ...



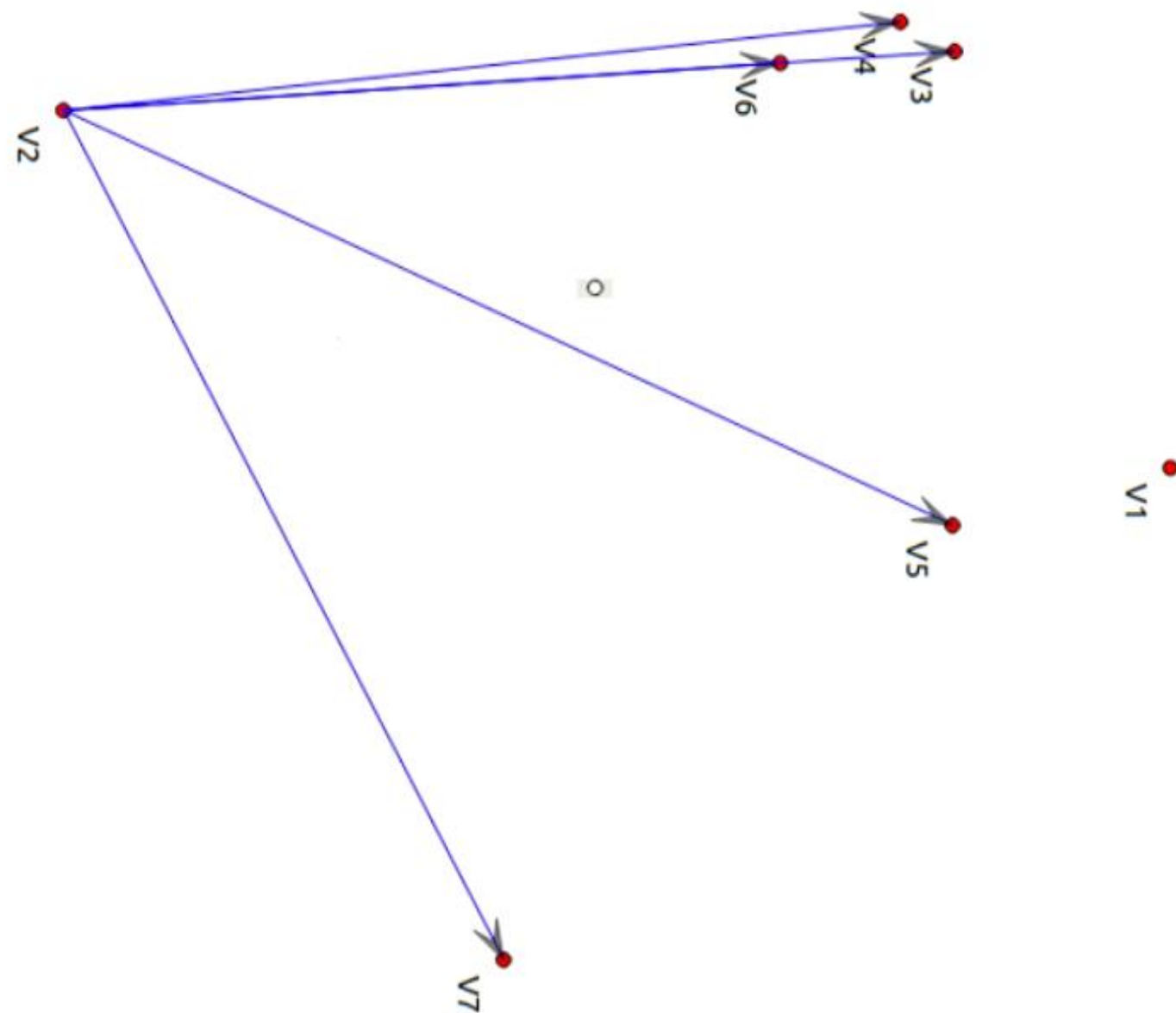
Provides a realistic environment



NS3 makes the data exchange between the simulated vehicles possible (and emulates them)
Emulates data exchanges (range, packet loss, ...) with a high level of realism

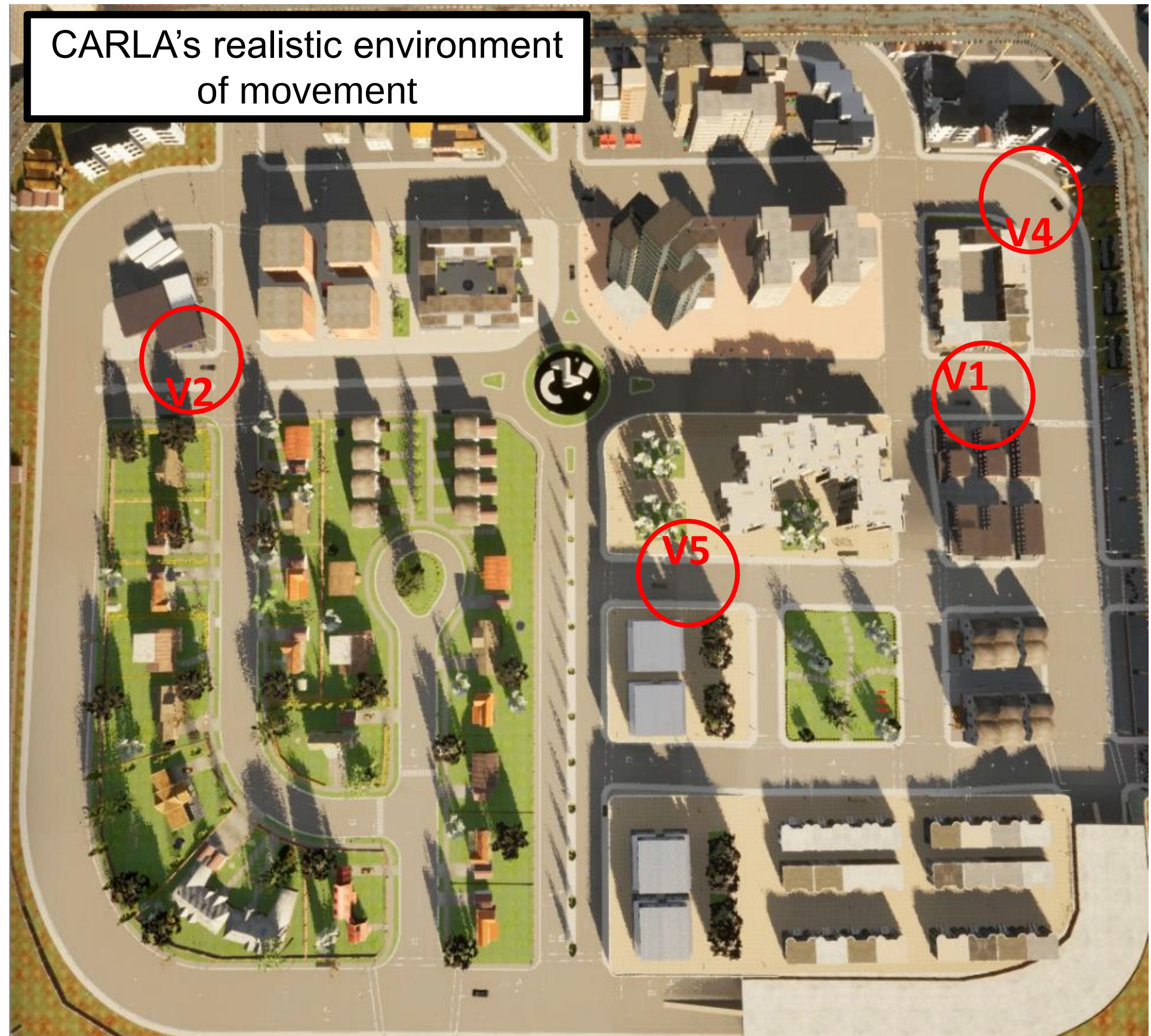
RUMCO software framework

Reached proof of concept



Simulated nodes into NS3 Network simulator and exchanged frames (Here : Ideal WIFI)

CARLA's realistic environment of movement



Achievements and current status

- Model development
 - Two simulation tools have been developed to evaluate the sustainability of mobility systems and their evolution.
 - ABSUM tool simulates the movement of individuals by different modes within a city.
 - RUMCO tool allows to evaluate the contribution of information exchanges during these trips at the scale of a neighborhood
- Data collection
 - Data for indicators calculation and model inputs were collected
 - Data for model validation (traffic counts) also collected
 - Cleaning of data to allow the application is achieved (Hard work ... See same pbs : Afshin Jafari et al. 2021 from RMIT, University Melbourne City Campus, Australy)
- Scenario development (with ENSAS)
 - Scenarios were completed to account for demographic and employment evolutions

Perspectives

- Short term
 - Evaluation of the scenarios 2.8 (before december 2021)
- Long term
 - Coupling regional – urban modelling
 - Understanding residential and mobility choices
 - Evaluations of new concepts

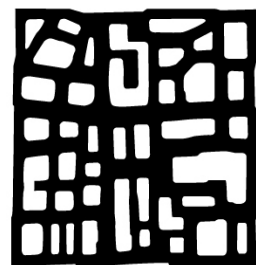


Contact :

Nadège Blond

nadege.blond@live-cnrs.unistra.fr

With the great and kind contribution of



Paul Salze : urban mobility modelling

Florian Kohler : air pollutant emissions

Joanne Hirtzel : demographic scenarios

Grégoire Skupinski : data collection

Alexis Conesa : accessibility

Arnaud Piombini : Urban mobility modelling

Olivier Finance : bikeability

Christophe Enaux: mobility behavior

Eliane Propeck: soft mobility



Benoit Hilt

Florian Kohler

Michel Basset

Sebastien Bindel

Frederic Drouhin

Jonathan Ledy

Djafar Ould Abdeslam



for scenarios



**for coupling with
the indicator system**

Thank you for your attention!

nadege.blond@live-
cnrs.unistra.fr



Funding Period
07/2018 –06/2021

Co-Funding Project Partners



Associated Partners



Networks



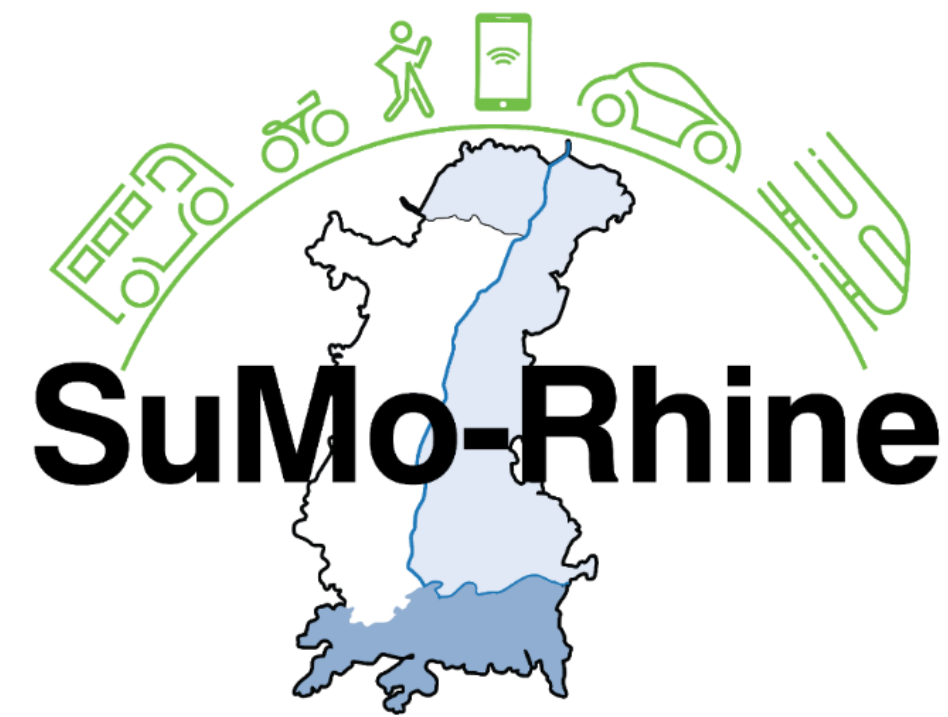
Sustainable Mobility – a Municipal Challenge

Monika Neuhöfer-Avdić
Dr. Markus Hofmann

© MGS-Südschwarzwald GmbH



Lössach



Application: Basel Tram no. 3

Alexis Conesa

Laboratoire Image Ville Environnement - Unistra

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



Basel Tram 3

An example of Upper Rhine Region crossbordering policy for sustainable mobility

Highly criticized, notably on the Swiss side

Mobility figures below expectations



Credits: Saint-Louis Agglomération

Crossbordering Modal Shift: 1% in 5 years instead of 2% expected

Context Analysis & Accessibility Measures

Rapp 2020

Context

Urban Planning Context

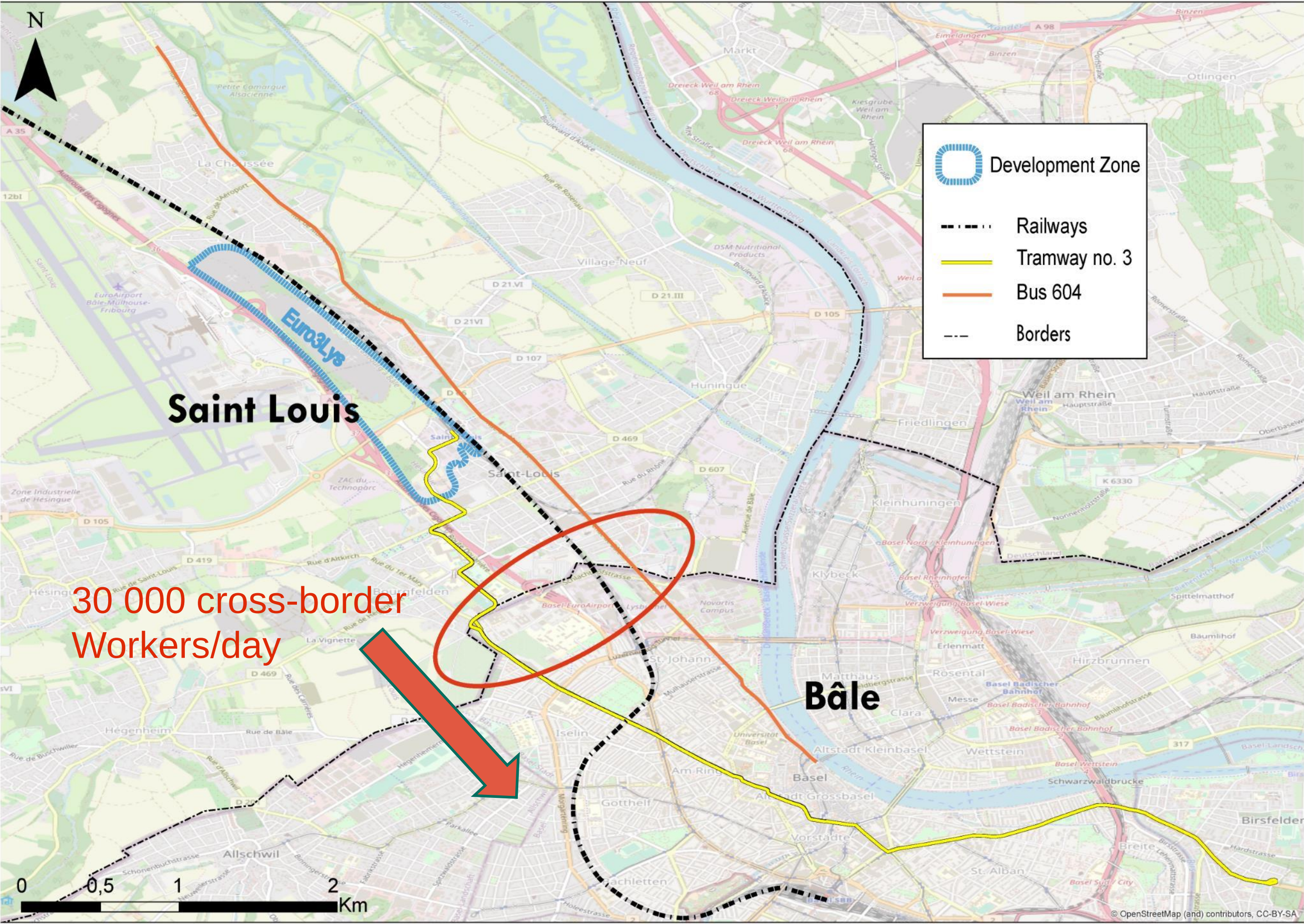
Does not serve
St-Louis city center

PT competition:

Train (67%) vs
Tramway (15%) vs
Bus 604 (13%)

Pricing issue

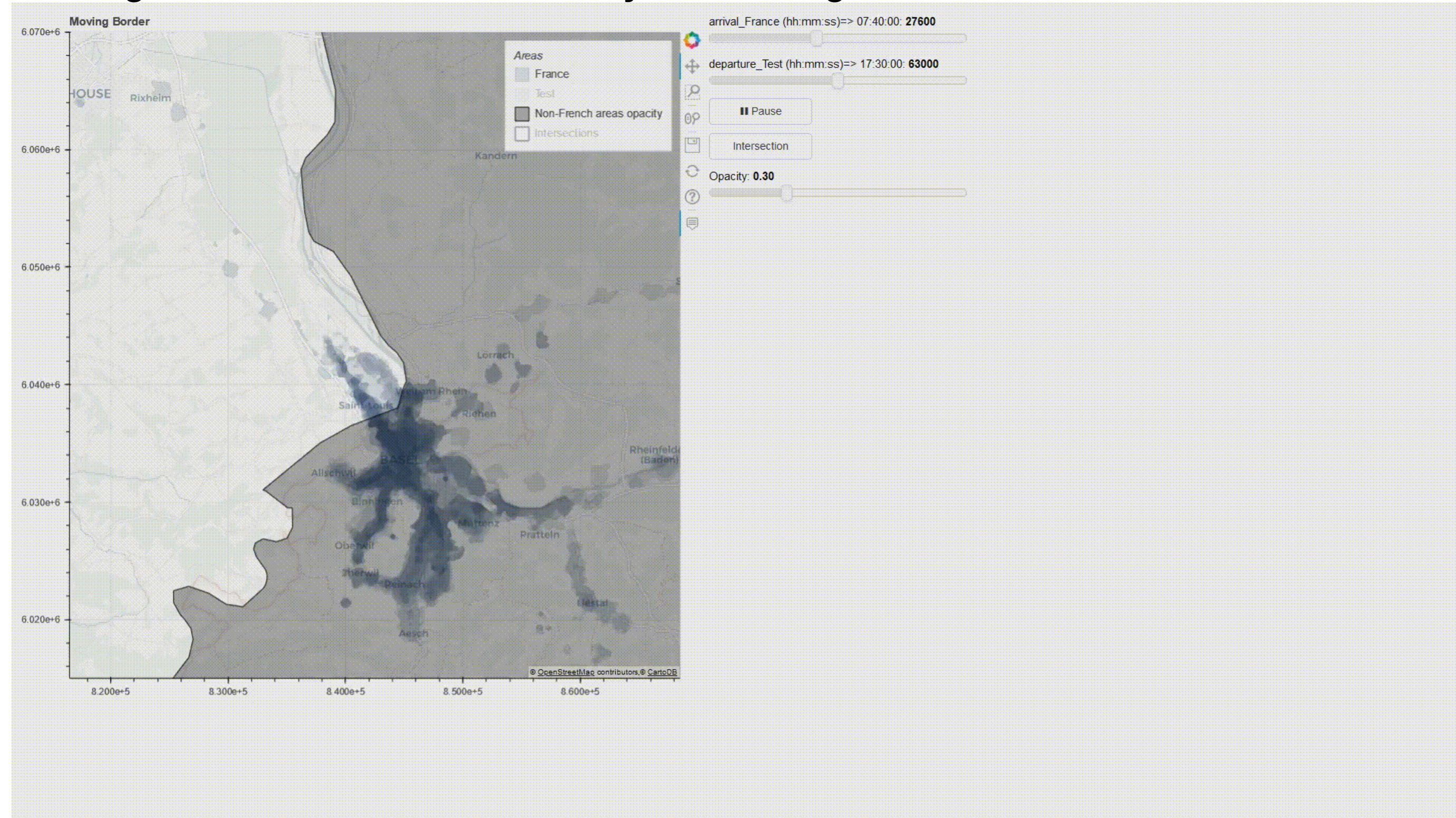
Expensive and hard
to understand for
French users



Accessibility: Potential for a genuine alternative to car-only commuting toward Basel?

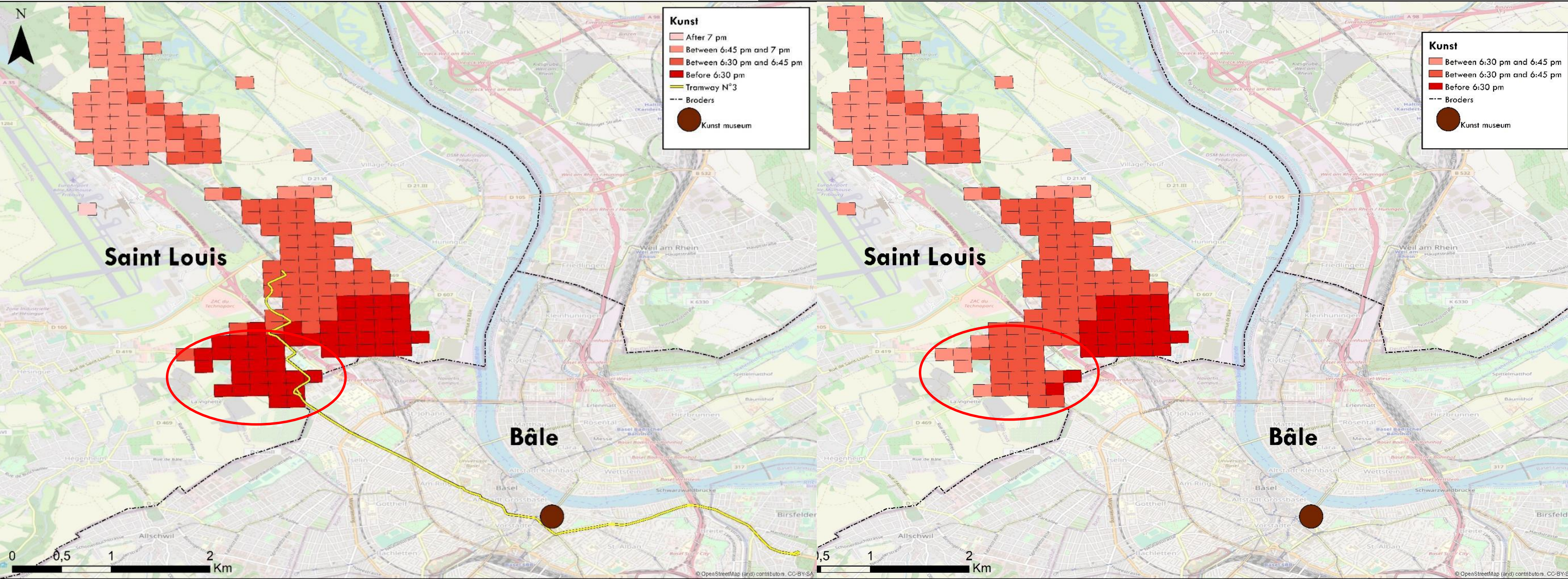
Dynamic 30 mins
Isochrones to the
Basel main job
providers at morning
& evening peak hours

Working age
Population (INSEE
2015) accessible
thanks to the Tram 3:
up to 70% for some
job providers



Accessibility: Potential for a tramway-driven crossbordering policy towards cultural activities?

Kunstmuseum – Evening end time - 6 pm:



With Tram

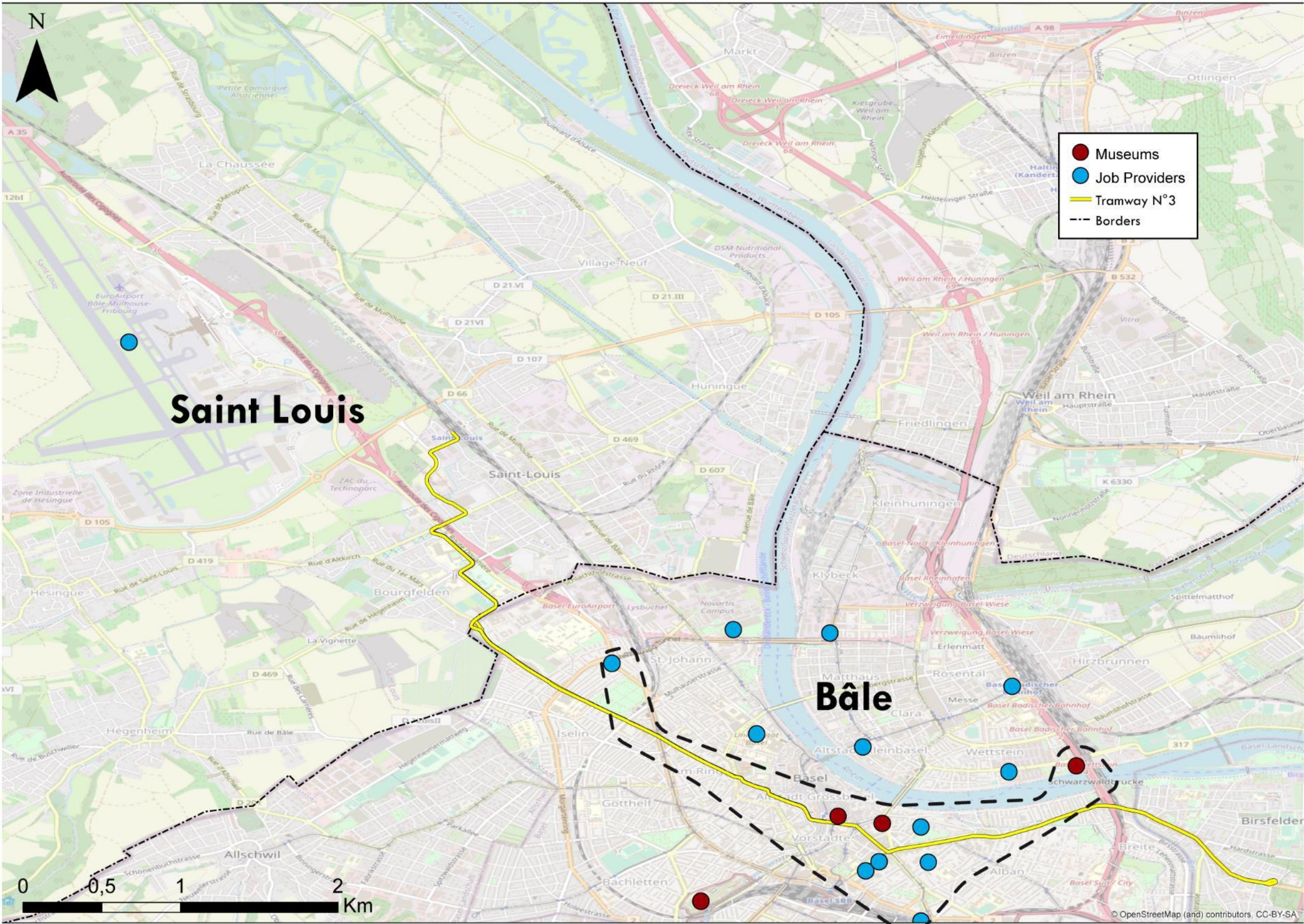
Without Tram

Synthesis

Basel
Tram 3 could be useful for central and well-connected facilities

Saint-Louis
The “winning” neighborhoods are the poorest → a tool for equity policies?

Perspectives
Future projects (EAP extension, TriRheno LR)



Thank you for your attention!

conesa@unistra.fr



Funding Period
07/2018 – 06/2021

Co-Funding Project Partners

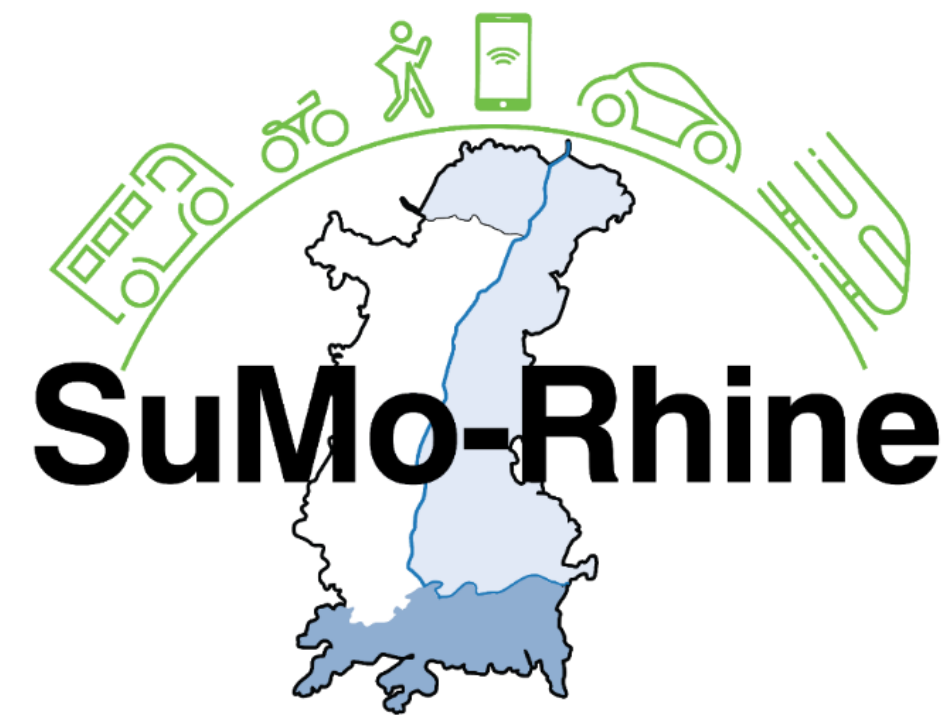


Associated Partners



Networks





Sustainable Mobility in the Upper Rhine Region



Andreea Grigorovschi, Assoc. Prof., ENSAS-AMUP/IMM Chair
Jeremy Hawkins, Lecturer, ENSAS-AMUP/IMM Chair
Marie Fruiquière, Research engineer & PhD Candidate, ENSAS-AMUP/ IMM Chair

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



WP.2.8. SuMo Indicator based Atlas & Exploratory Sustainable Mobility scenarios

Main objectives:

*Investigate and produce knowledge on the existing state of mobility in the Upper Rhine and
Evaluate sustainable mobility scenarios through the SuMo indicator system*



CONTENTS

The SuMo Atlas

- Multi-scale mapping & visual analysis of current mobility systems and urban environments in the Upper Rhine Region

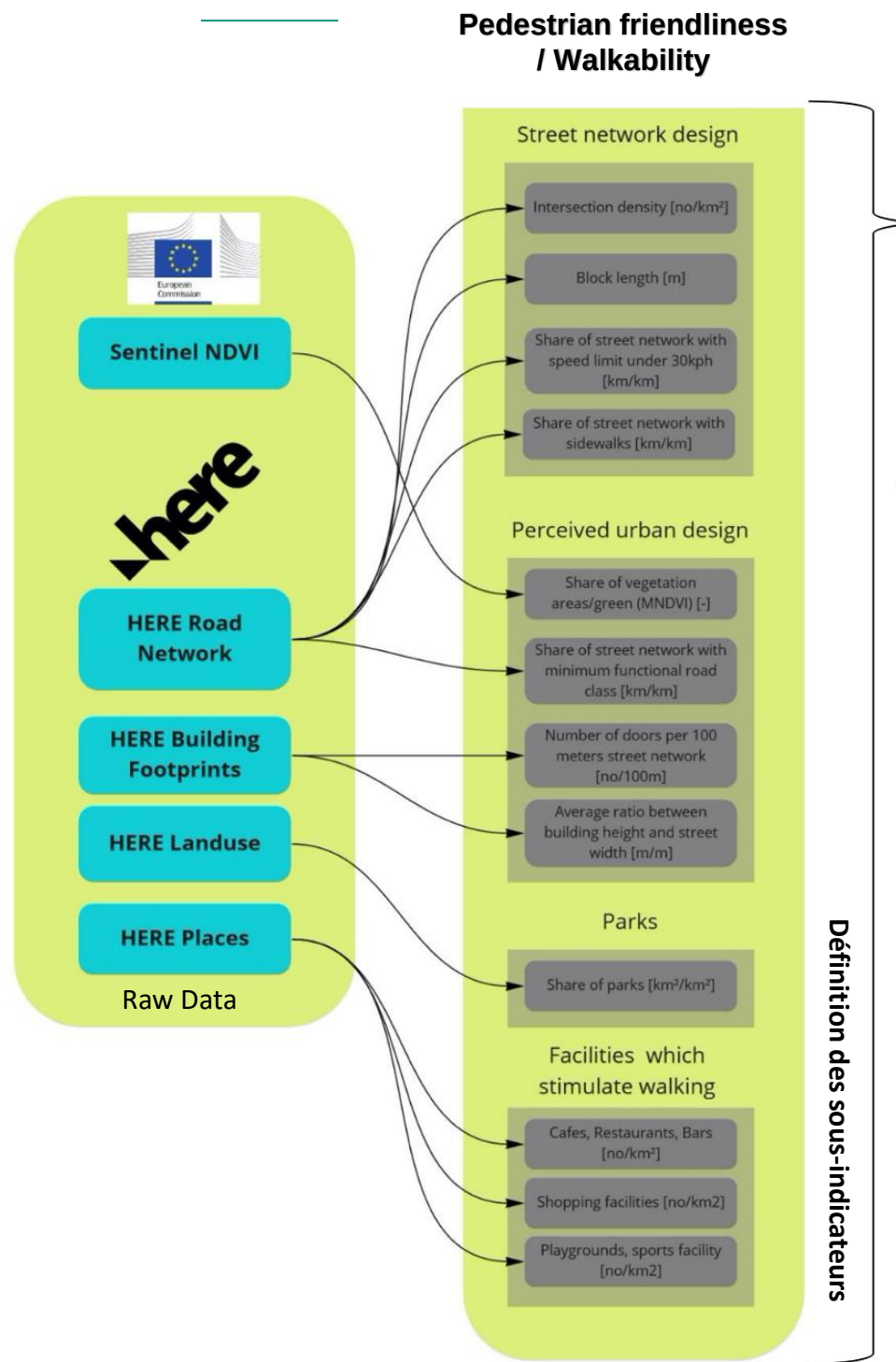
Exploratory mobility scenarios for the Strasbourg Eurometropolis

- Analysis of mobility infrastructures, sustainable mobility policies and transition levers in the territorial scenarios for Strasbourg 2030, as a basis for SuMo evaluation

Research outputs

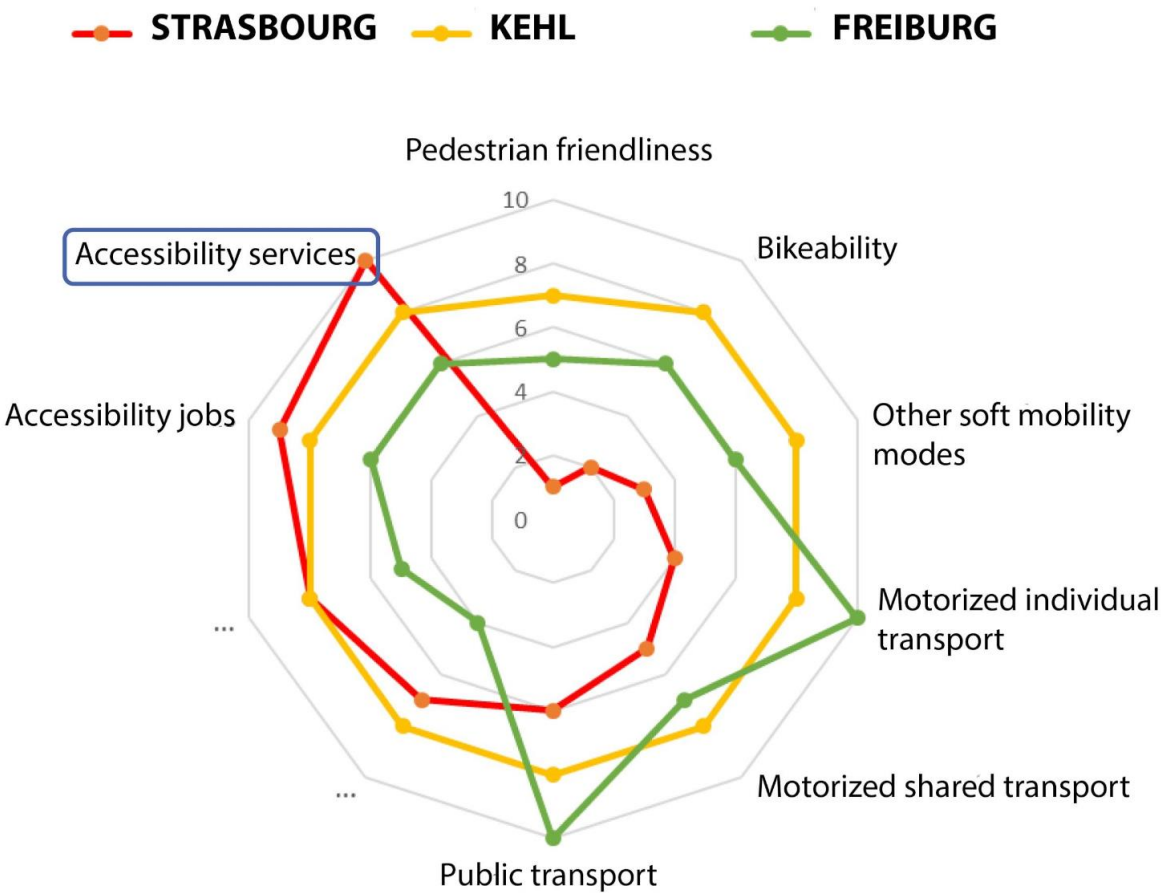
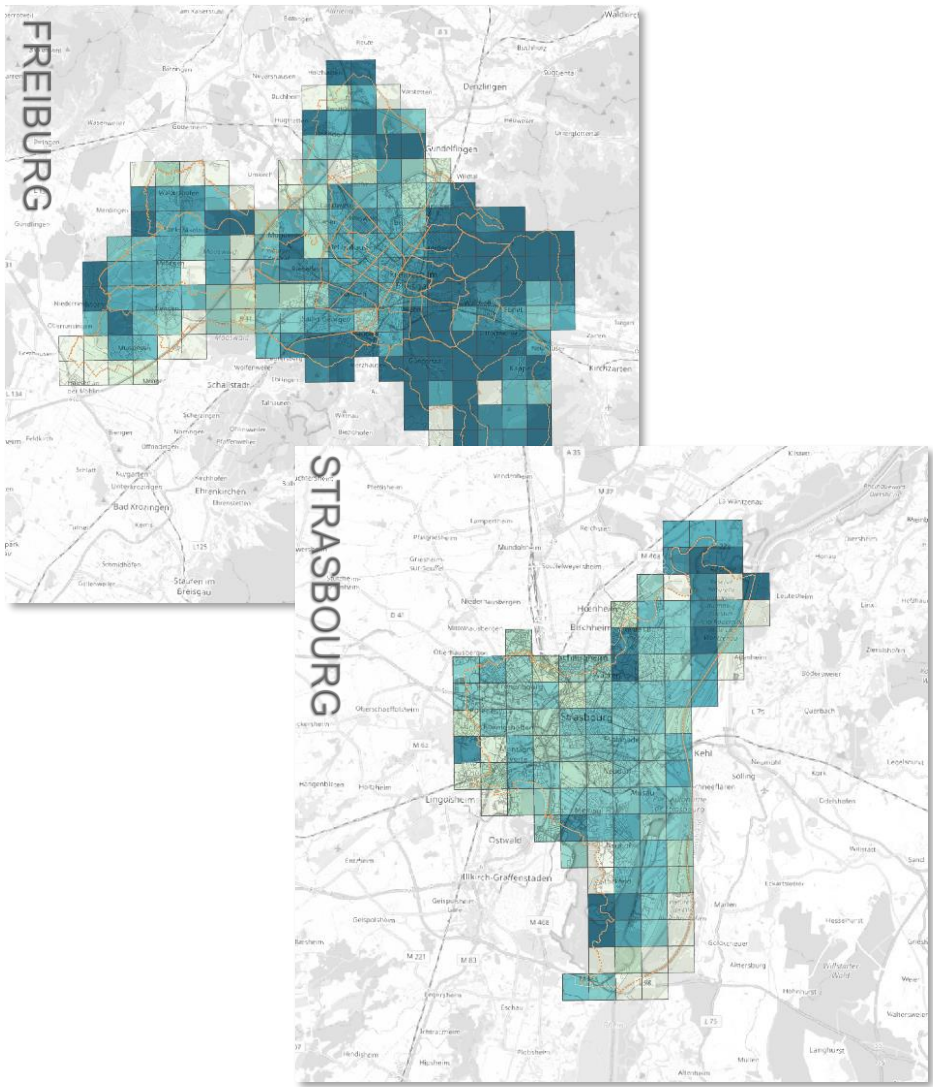


THE SUMO ATLAS | Multi-scale mapping & visual analysis of current mobility systems and urban environments in the Upper Rhine Region



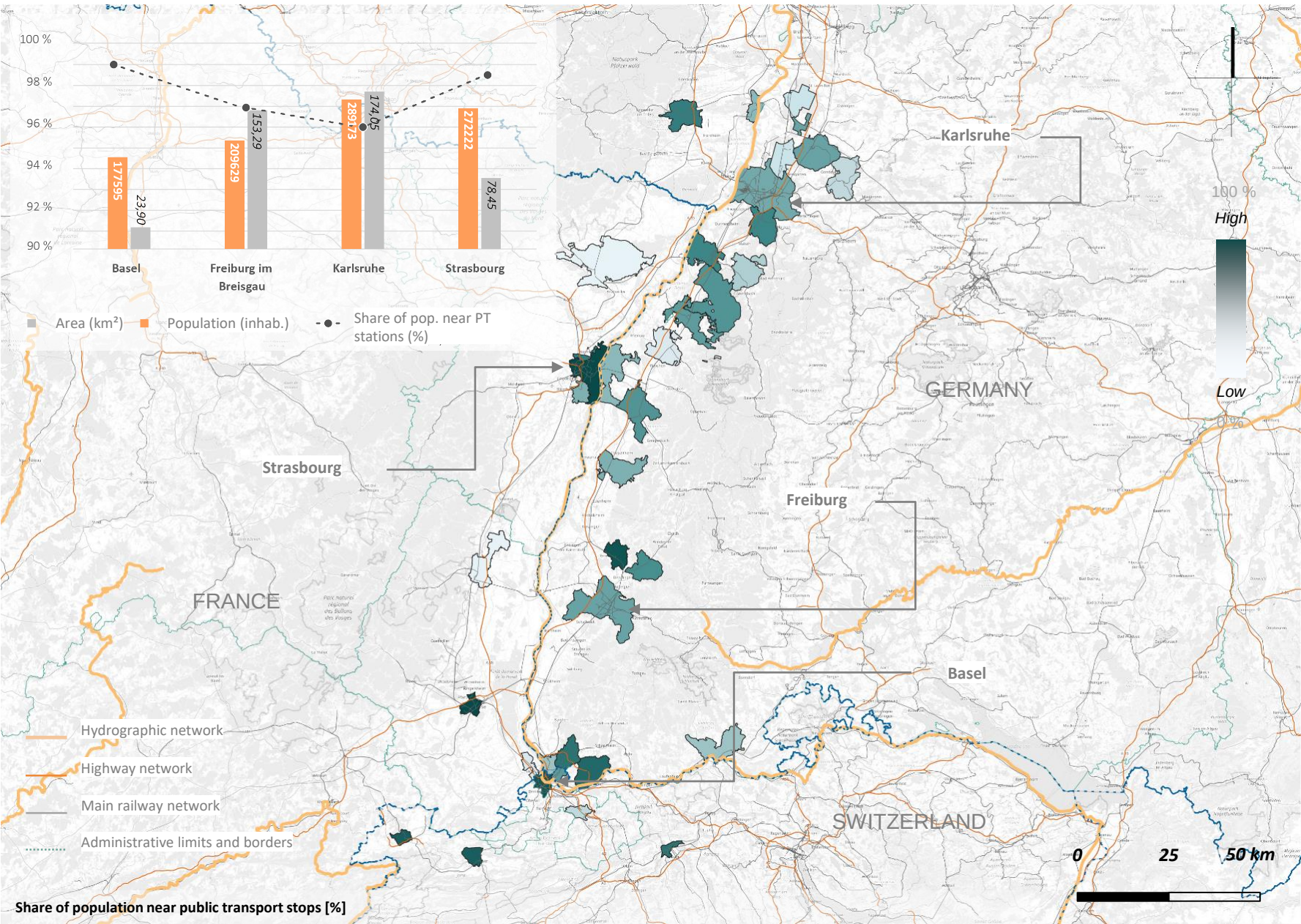
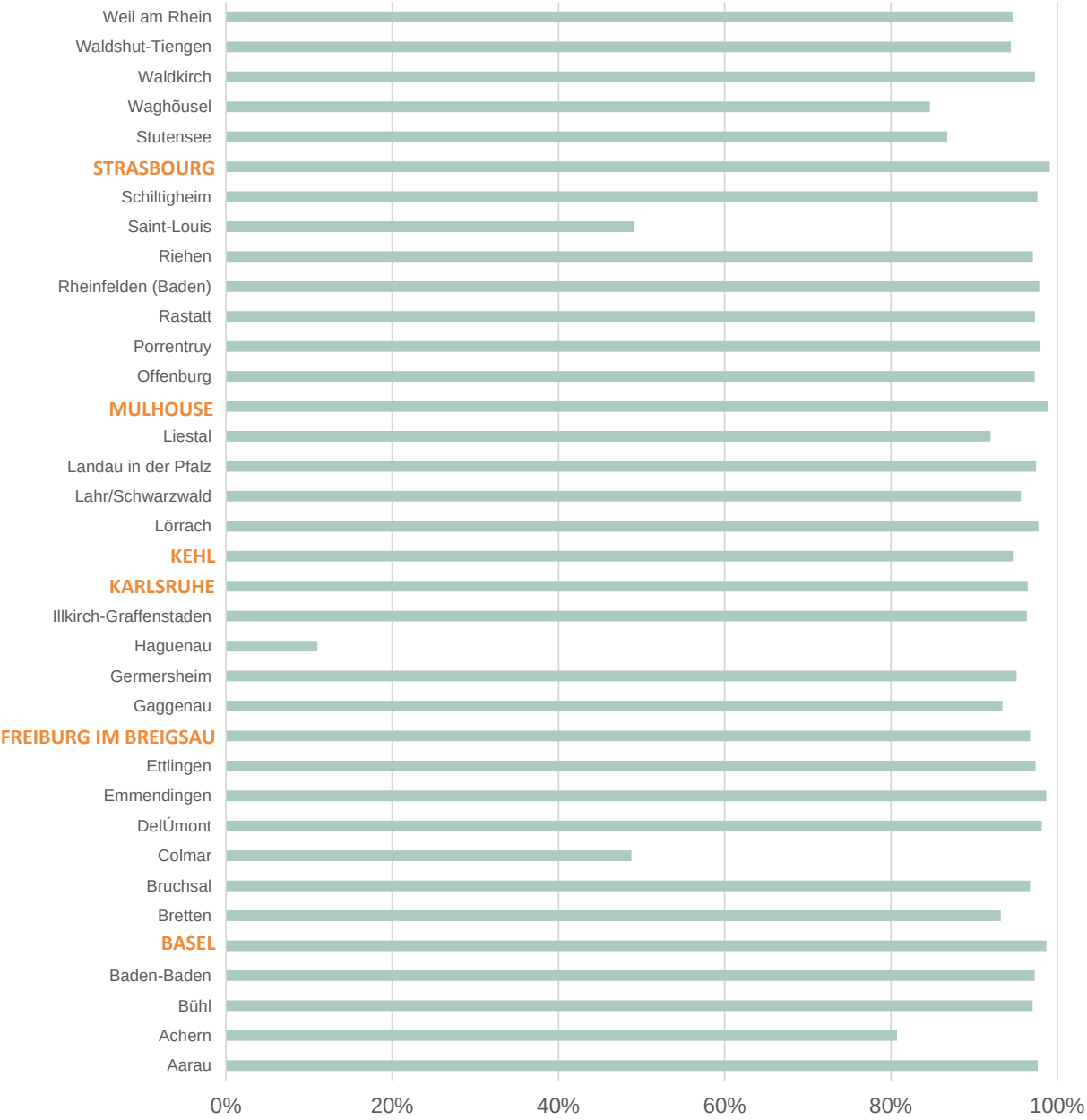
Graphical and mapped visualisation of the results of the indicator system

Enable comparison through quantitative data and geolocation



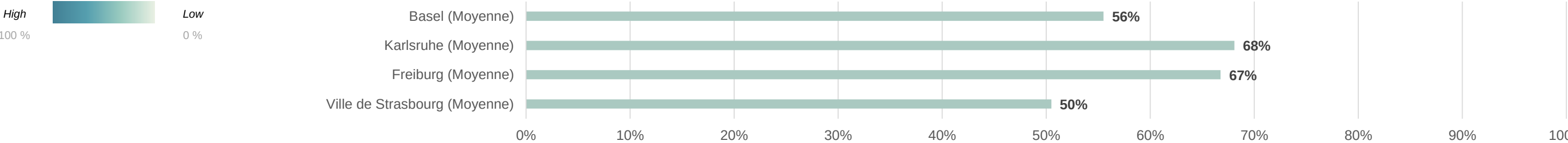
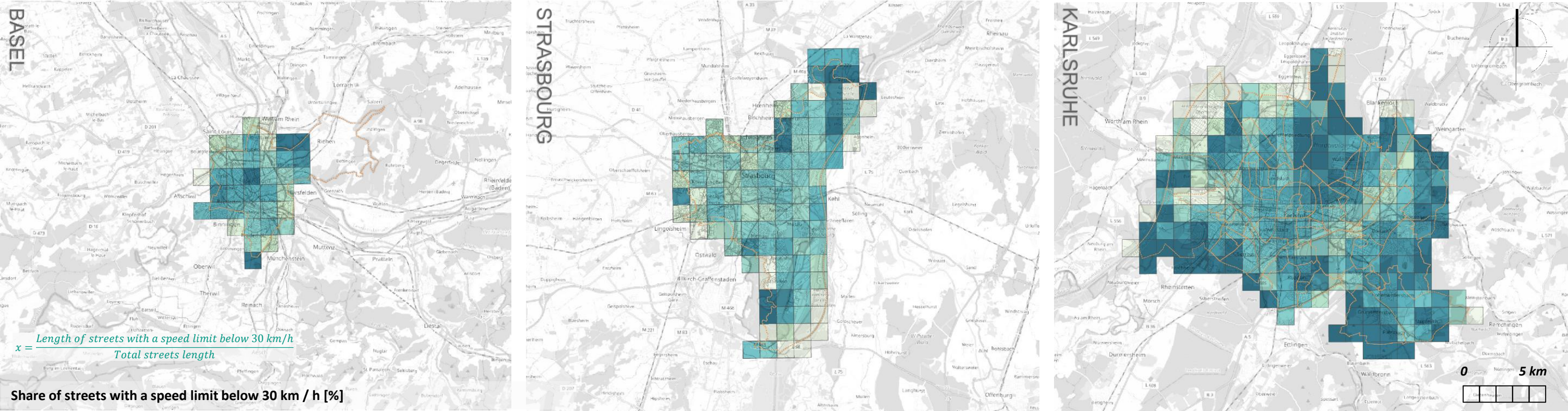
A general overview at the Upper Rhine Regional scale

| Results per city and per (sub-)indicator



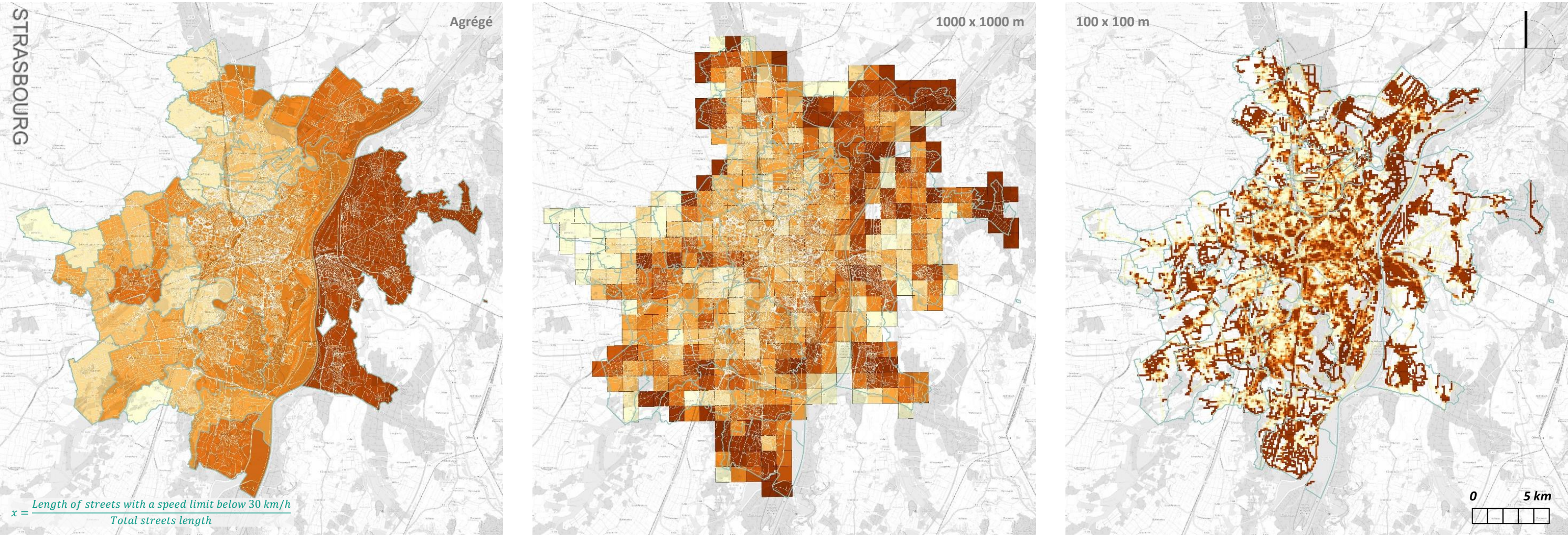
Comparative mapping at the scale of the "test" cities

| (sub-)Indicator results on municipal scale _ 1km x 1km grid



Focus on cross-border territories

| In-depth analysis : multiple sampling methods

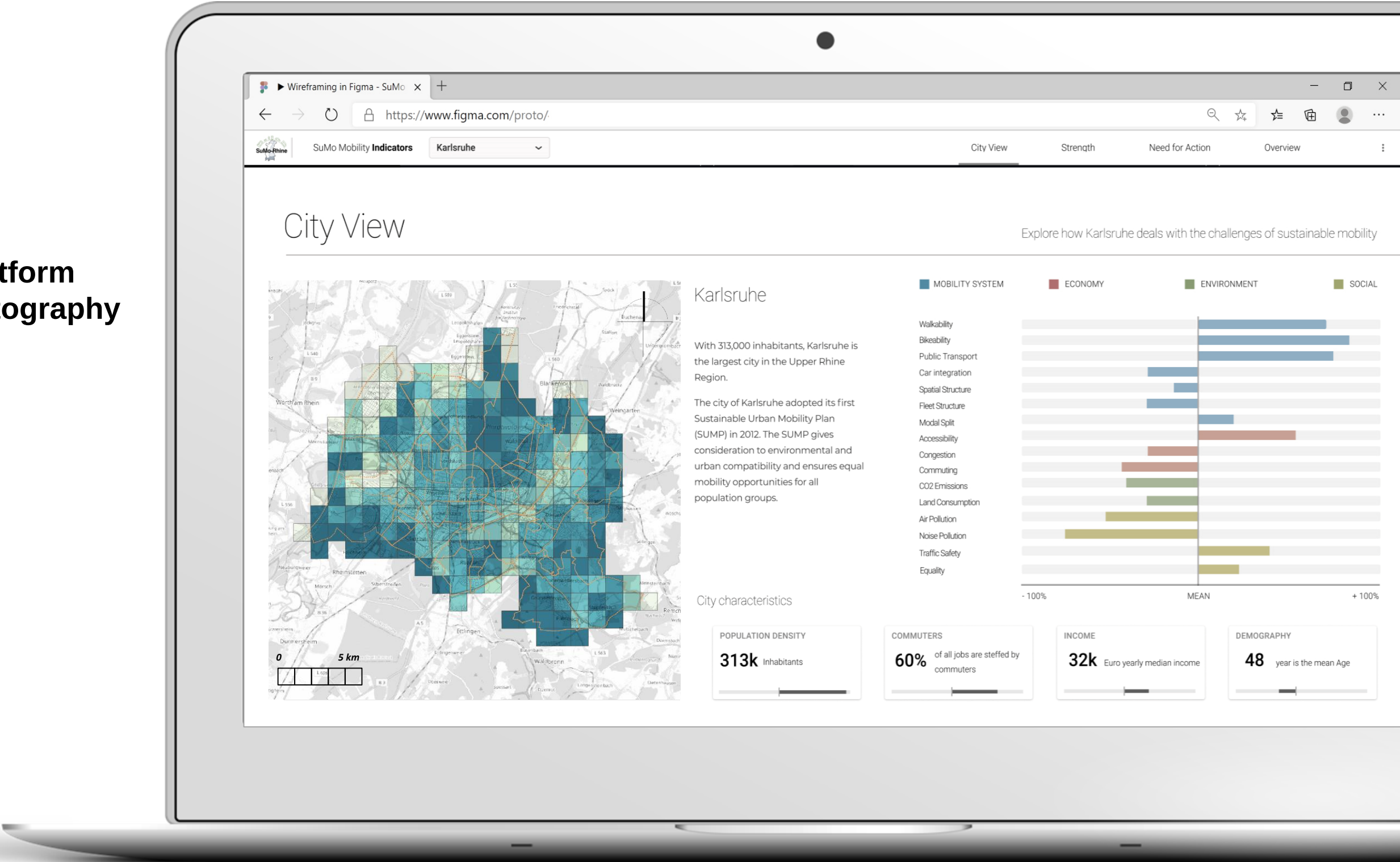


Share of streets with a speed limit below 30 km / h [%]



Research Perspectives

- | Further Atlas development
- | Enrich the online interactive platform
- | Critical interpretation of the cartography



EXPLORATORY MOBILITY SCENARIOS for the STRASBOURG EUROMETROPOLIS | Analysis of mobility infrastructures, sustainable mobility policies and transition levers in the territorial scenarios for Strasbourg 2030, as a basis for SuMo evaluation

Possible futures of sustainable mobility systems

| Exploratory scenarios for the Strasbourg Eurometropolis, for what purpose?

Test the indicator system as a decision-making tool

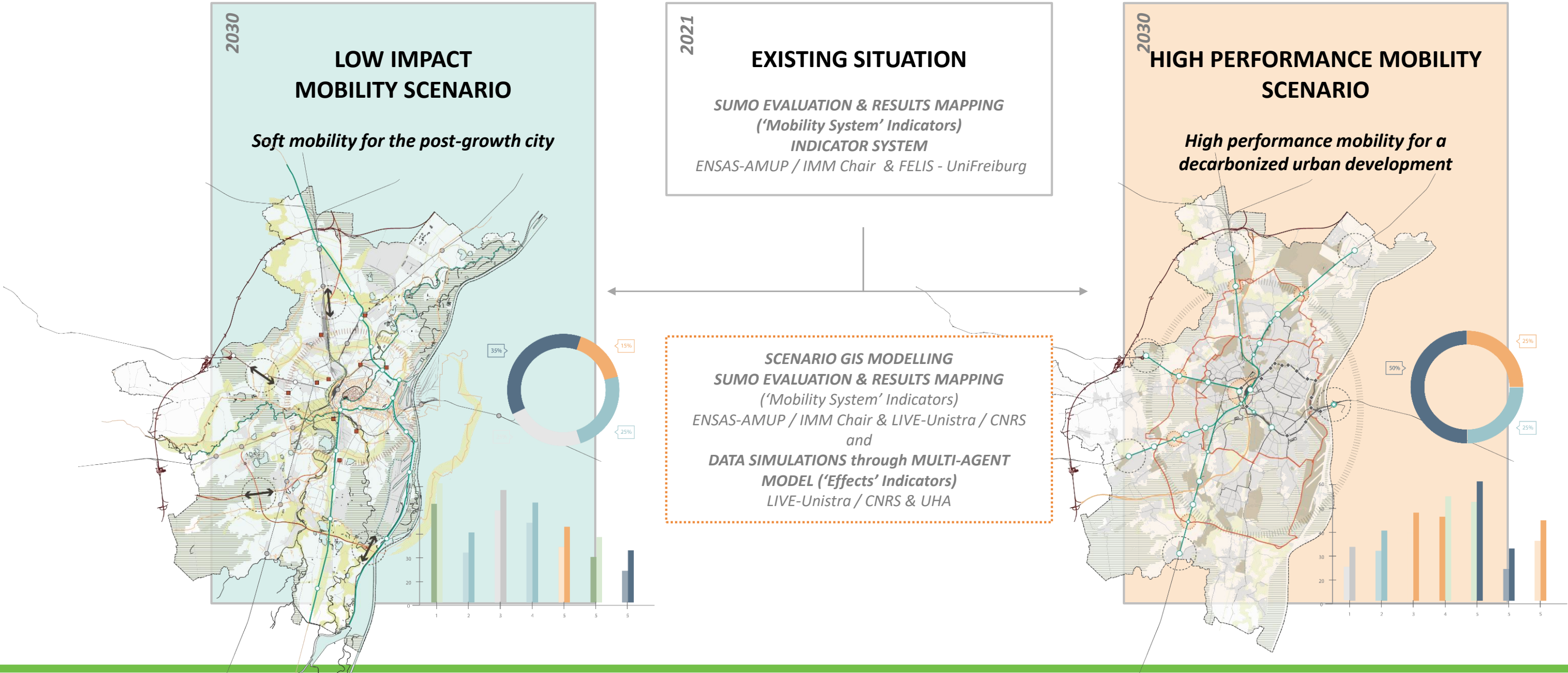
- Test the functionality
- Explore possibilities
- Demonstrate and facilitate dialogue with stakeholders and policy makers

Assessment of local policy visions for sustainable mobility

- European/global environmental targets
- Municipal mobility systems
- Forward-looking platforms for transition

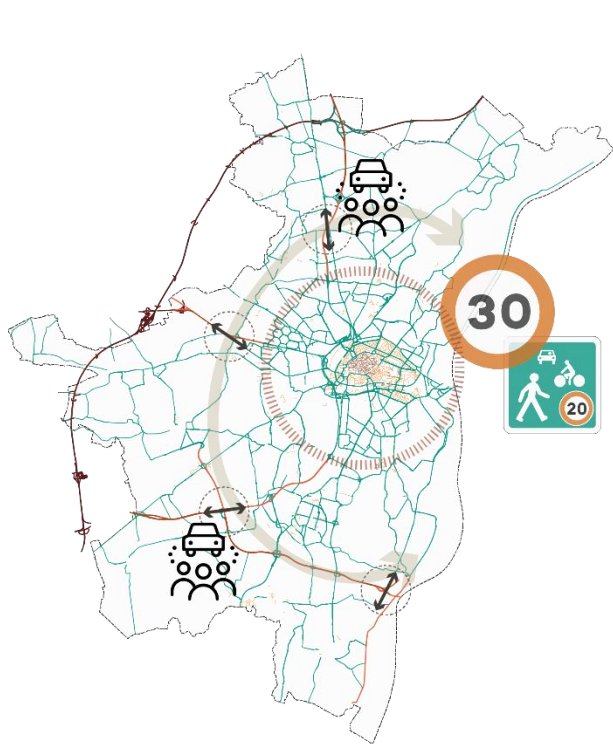


Contrasting scenarios for sustainable mobility and urban transformation

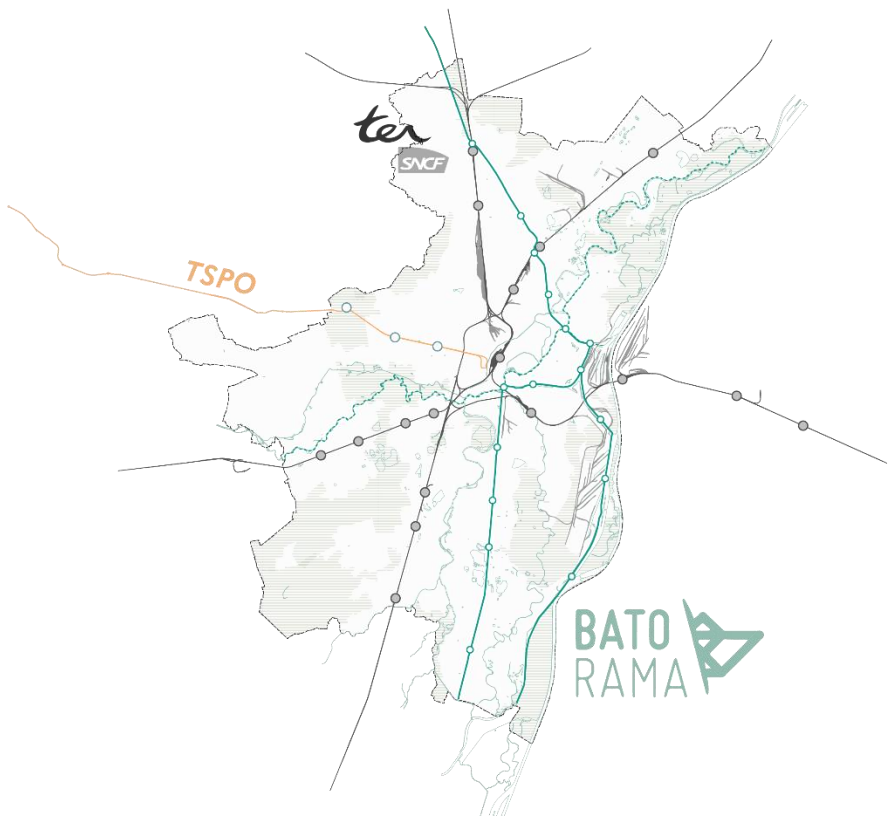


LOW IMPACT MOBILITY SCENARIO

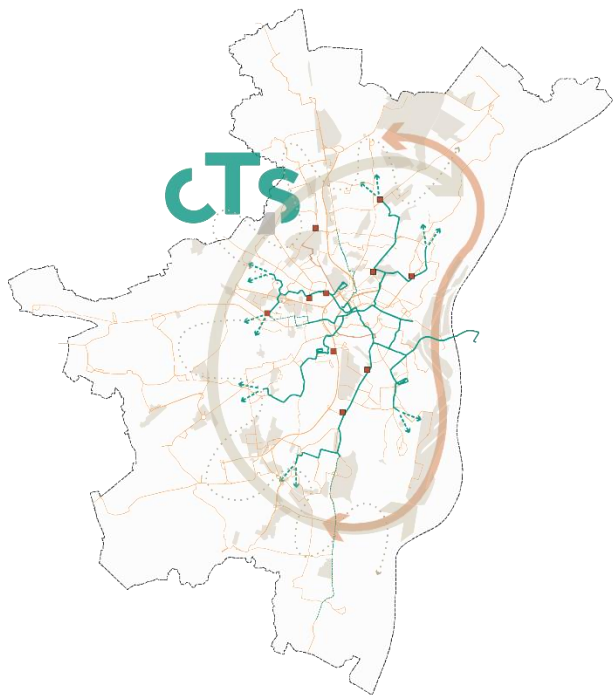
| Soft mobility for the post-growth city



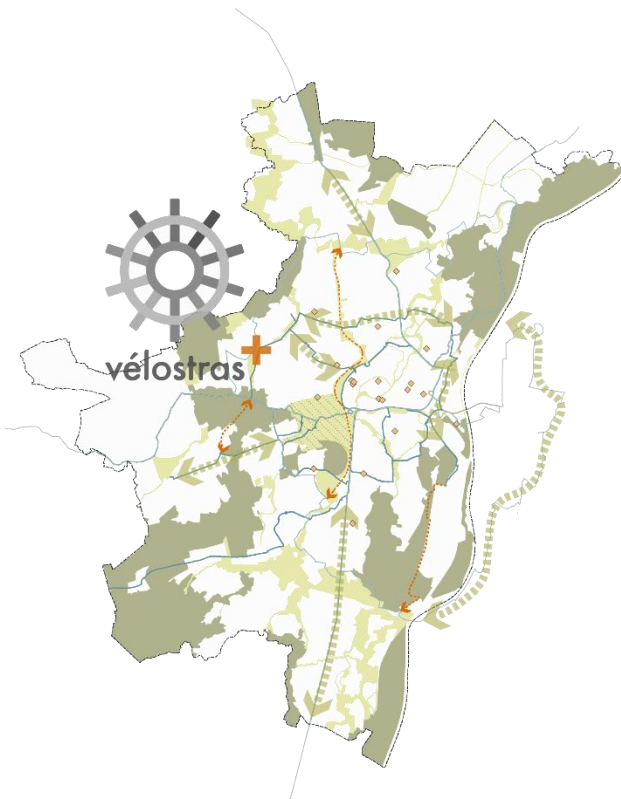
Discourage car entry by
deploying a « Calm City »
Plan and promoting car sharing



Provide interurban service via
the existing TER rail
network, a river shuttle and
transport on demand in
perirurban areas



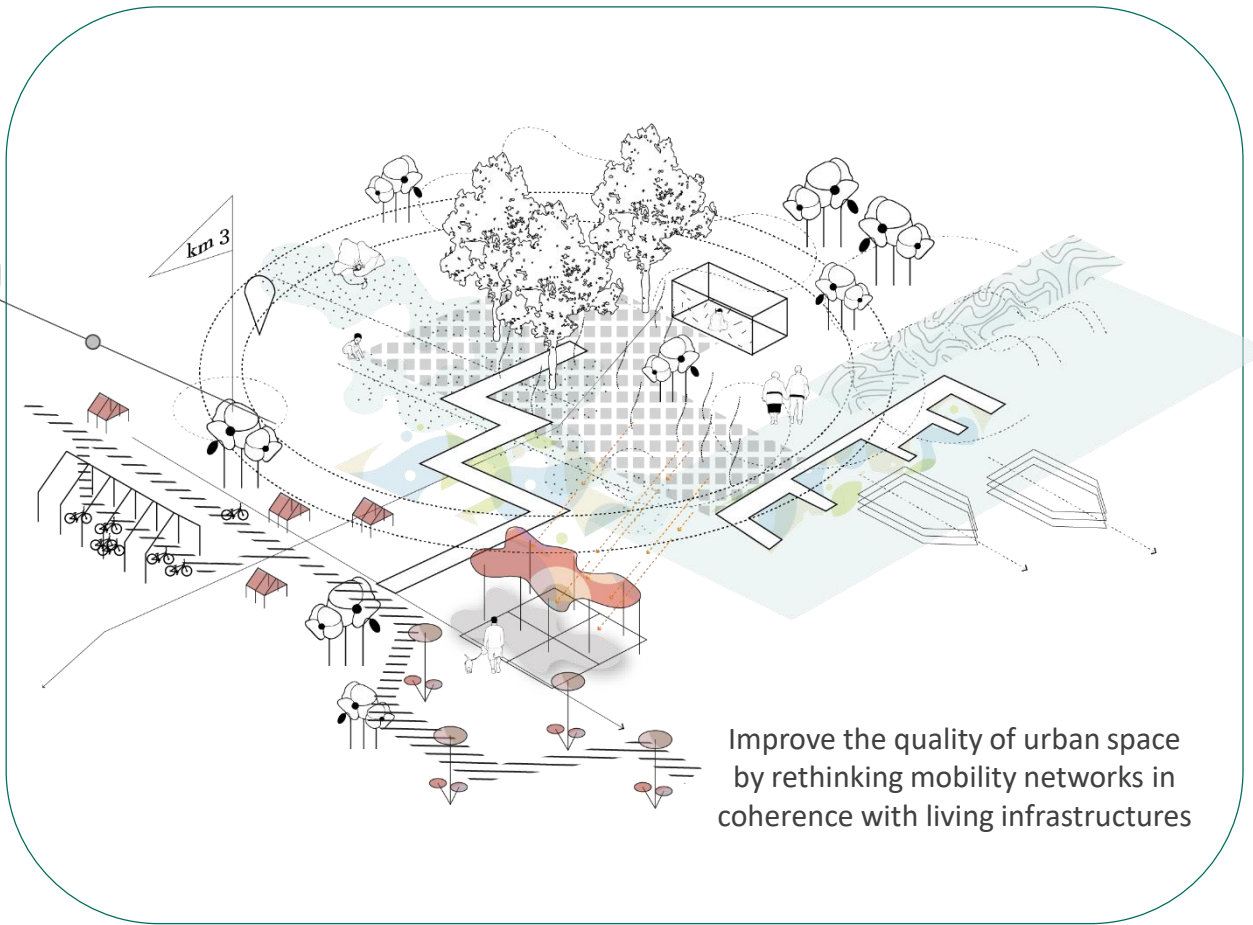
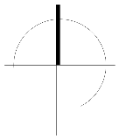
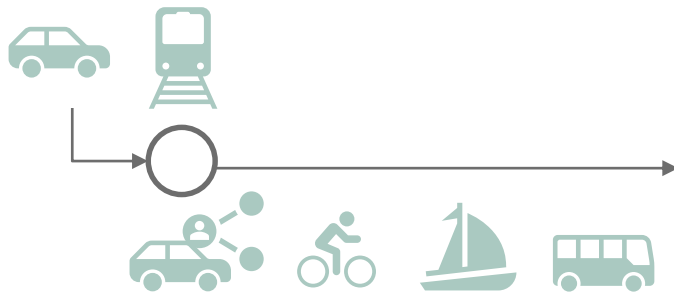
Extend the existing bus and
tramway matrix for
urban transportation services



Deploy a dedicated bicycle
express network based
on the VéloStras plan and
reinforce ecological
continuities

LOW IMPACT MOBILITY SCENARIO

- P+R
- Metropolitan intermodal connection
- Traffic calming zone
- GCO (Great Western Bypass)/ A35 motorway
- Road network
- Railway network
- VéloStras bicycle network
- River shuttle
- Waterways
- Ecological reservoirs / corridors



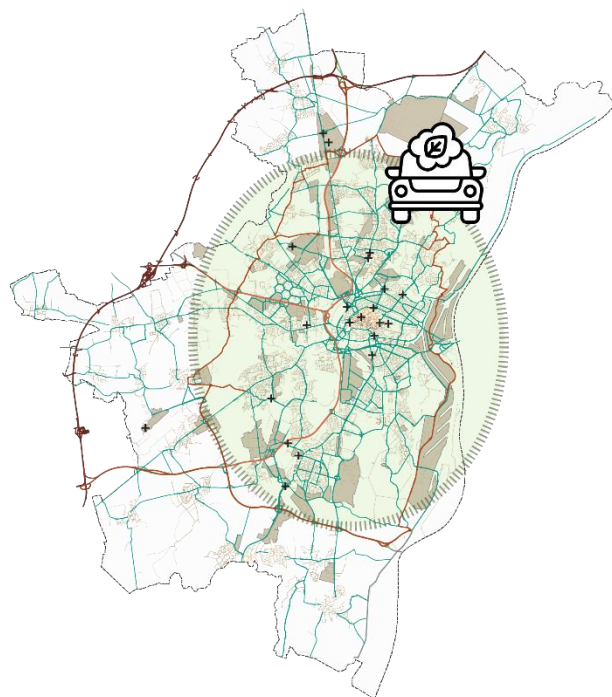
Improve the quality of urban space
by rethinking mobility networks in
coherence with living infrastructures

0 2,5 5 km

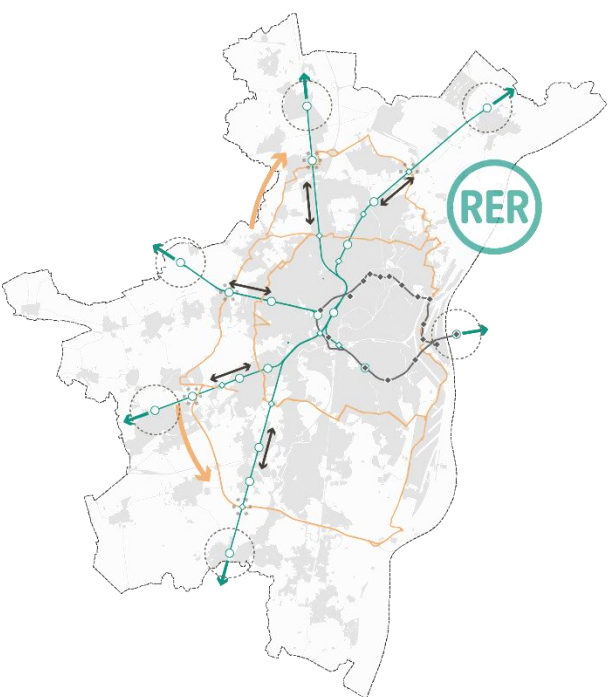
The green and blue matrix, support for alternative mobility in Strasbourg Eurometropolis

HIGH PERFORMANCE MOBILITY SCENARIO

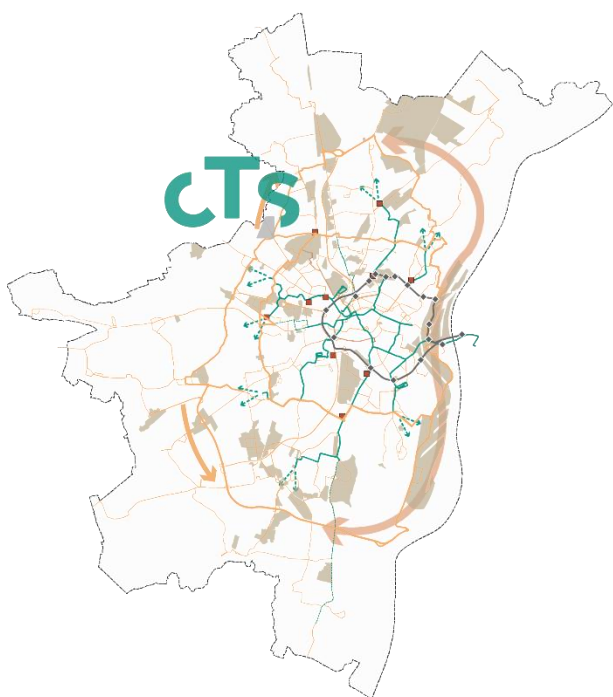
| High performance mobility for a decarbonized urban development



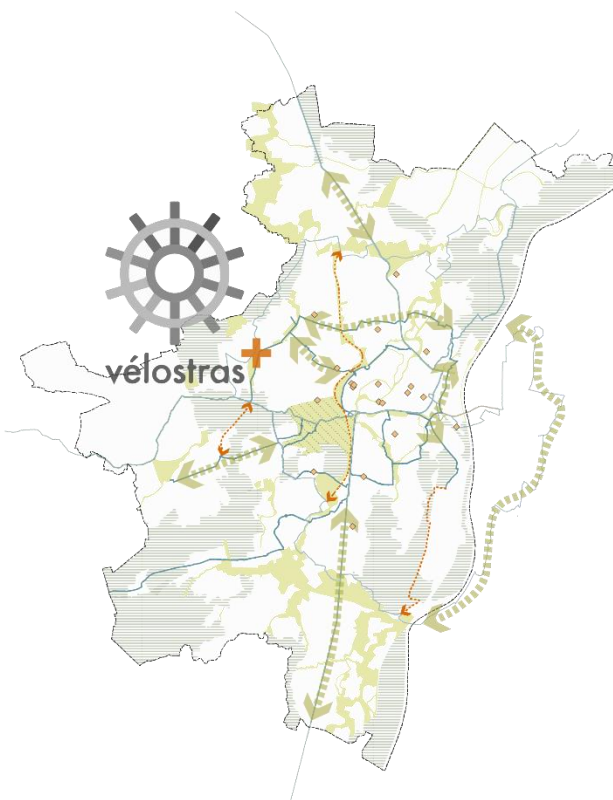
Accompany the decarbonized transition by the deployment of low-emission zones, as well as hydrogen and electric charging stations



Develop an Eurometropolitan Express Rail Network and BRT bypasses on the outskirts as vectors of urban renewal



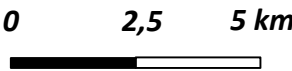
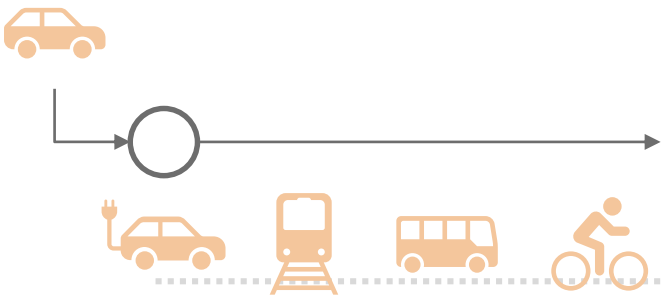
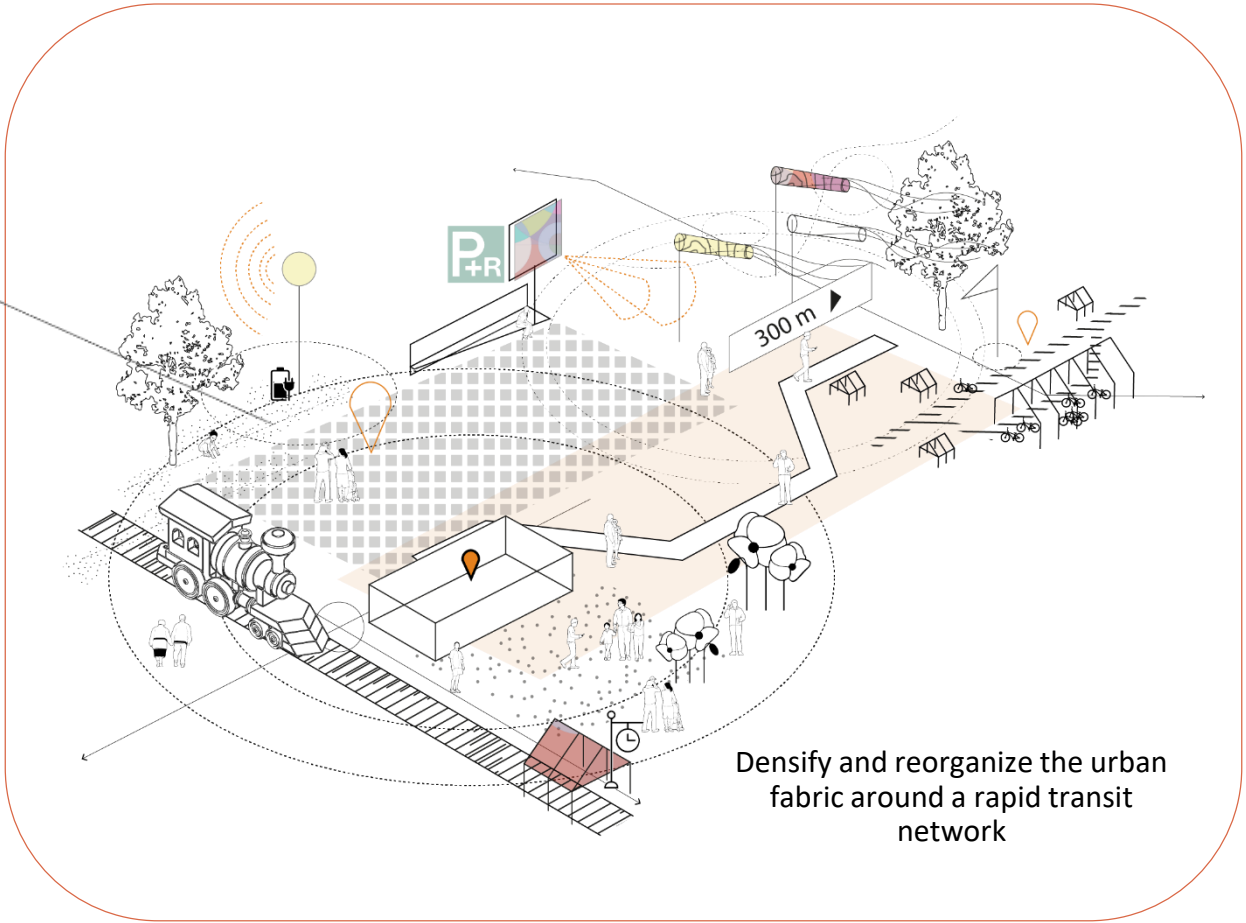
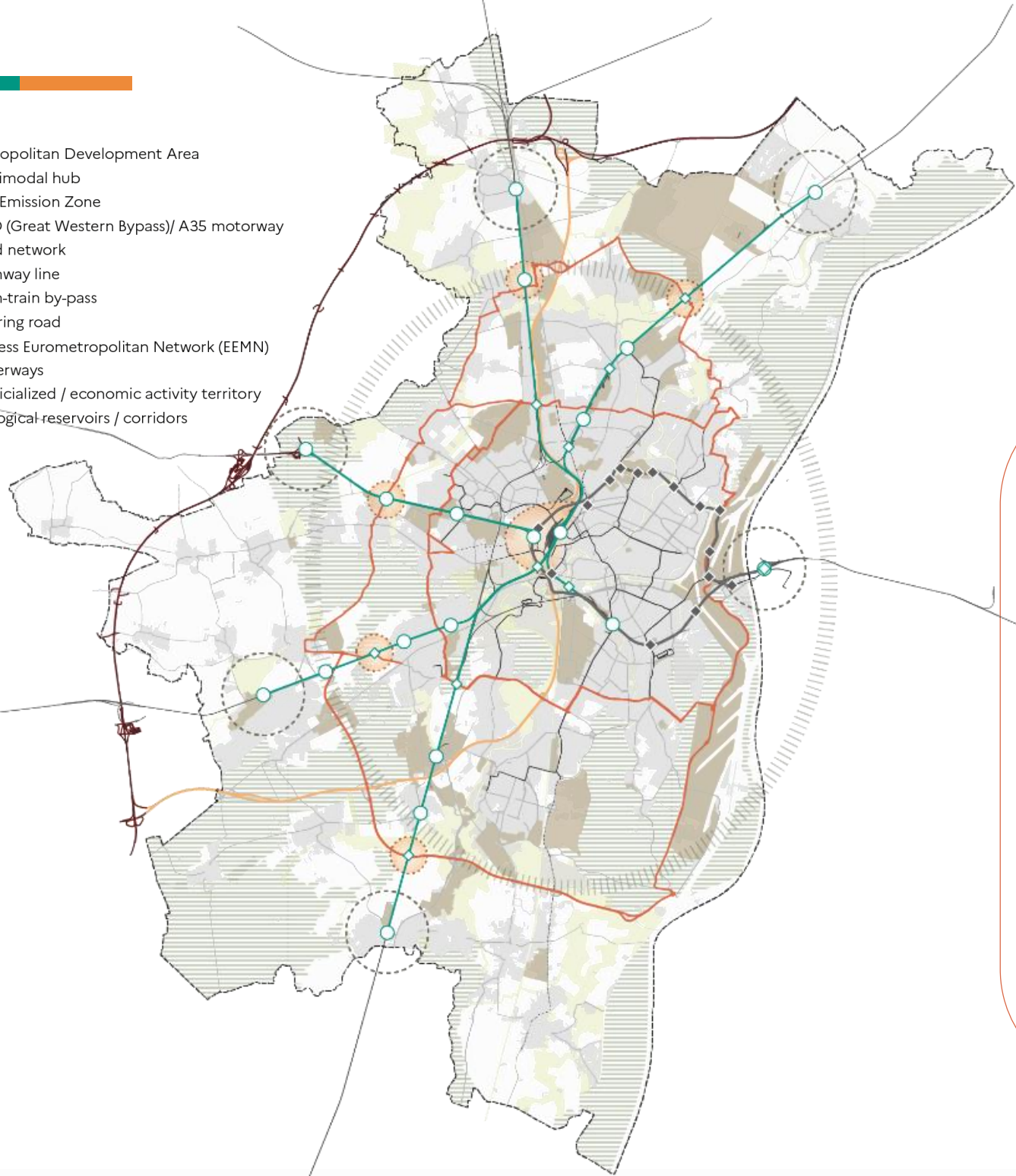
Create a dense and extensive urban public transport matrix (tramway and bus) and implement a tram-train



Deploy a dedicated an express bicycle network based on the VéloStras plan to form a fine territorial matrix

HIGH PERFORMANCE MOBILITY SCENARIO

- Metropolitan Development Area
- Multimodal hub
- Low Emission Zone
- GCO (Great Western Bypass)/ A35 motorway
- Road network
- Tramway line
- Tram-train by-pass
- BRT ring road
- Express Eurometropolitan Network (EEMN)
- Waterways
- Artificialized / economic activity territory
- Ecological reservoirs / corridors



The reappropriation of the TOD concept as a vector for urban renewal in the Strasbourg Eurometropolis

GIS scenario modelling for SuMo Indicator evaluation

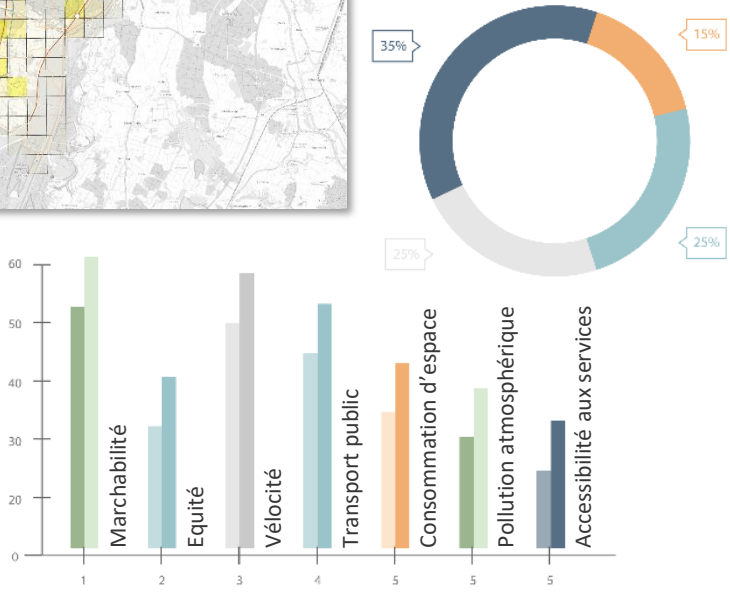
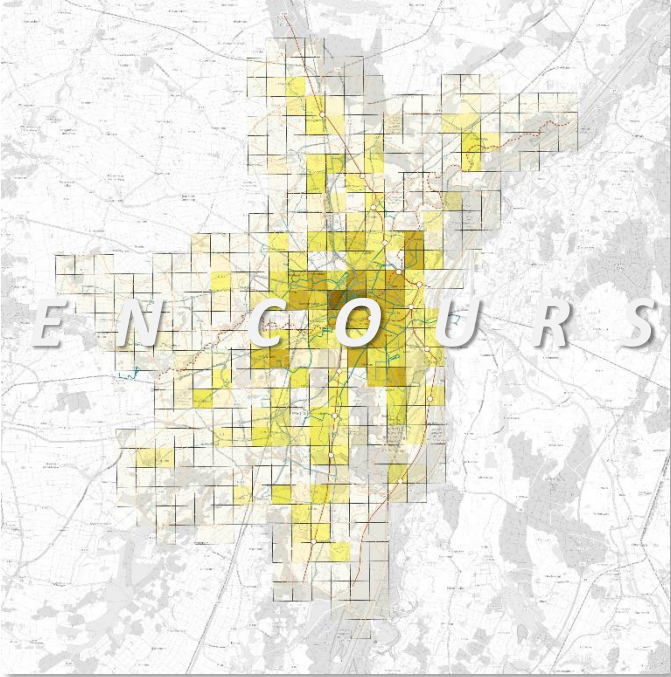
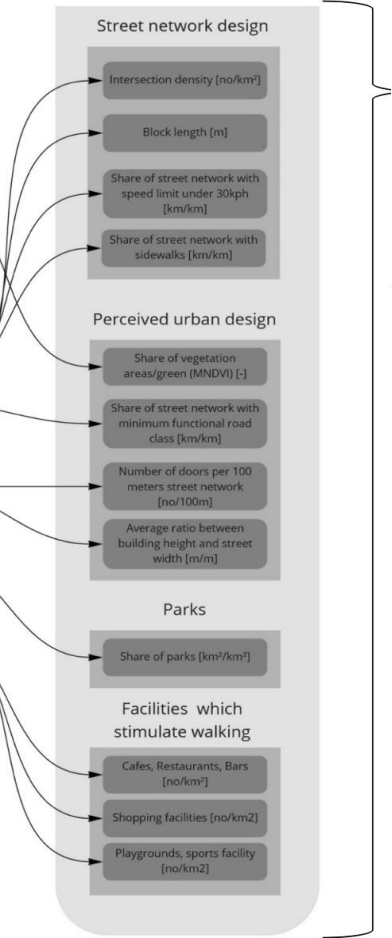
LOW IMPACT MOBILITY SCENARIO

Segment	Nature	Importance	Pos_sol	Sens	Vit_moy	Nb_voies	Nom_voie	Nom_commune	Etat
16163	route	zone 30	au sol	double sens	10	1	rue des jardins	Oberhausbergen	projeté
5241	route	zone 30	au sol	double sens	10	2	rue louise scheppler	Strasbourg	existant
10332	route	zone 30	au sol	double sens	10	2	rue louise scheppler	Strasbourg	existant
14502	route	zone 30	au sol	double sens	10	2	rue louise scheppler	Strasbourg	projeté
34888	route	aire piétonne	au sol	double sens	10	0		Wolfisheim	projeté
22135	route	secondaire	au sol	sens indirect	10		impasse louis arbogast	Strasbourg	existant
50116	route	artère	au sol	double sens	10	2	rue louise scheppler	Strasbourg	existant
4125	route	secondaire	au sol	double sens	10	2	rue des jardins	Oberhausbergen	existant
2755	autoroute	voie rapide	au sol	sens direct	70	2		Illkirch-Graffenstaden	existant
4359	autoroute	voie rapide	au sol	sens direct	70	2		Illkirch-Graffenstaden	existant
32868	autoroute	voie						Vendenheim	existant
2291	autoroute	voie						Entzheim	existant

SIMULATION & MODELISATION
SIG DATA

AMUP/ENSAS - LIVE/CNRS/Unistra

Sous-indicateurs



Indicateurs et sous-indicateurs SuMo Rhine



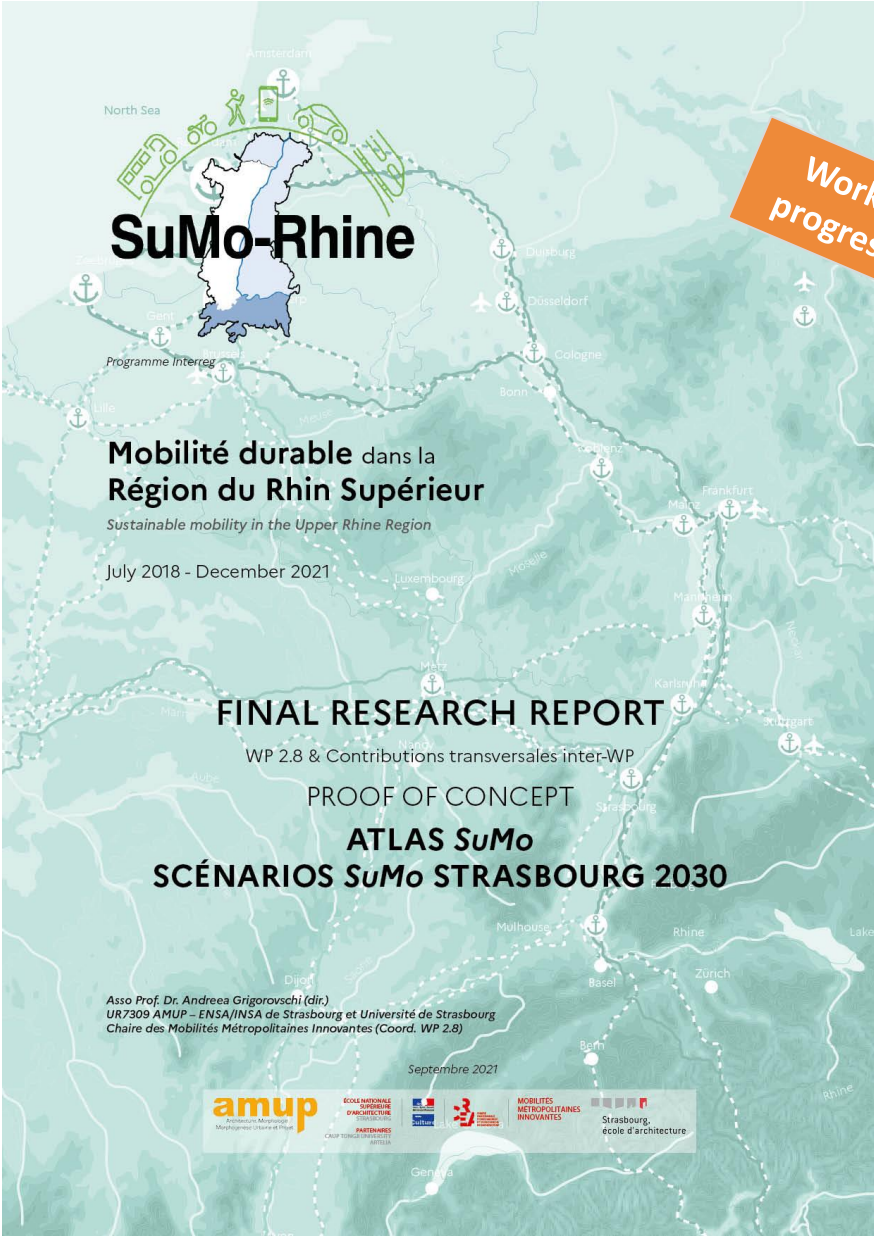


RESEARCH OUTPUTS

SuMo brochure



Final Research Report



Special thanks...



Lise LANÇON
Research Administrative Coordinator,
Strasbourg National School of Architecture



FELIS / Uni-Freiburg
Research Team
- *The SuMo Atlas* -



LIVE-CNRS / Unistra
Research Team
- *Scenarios modelisation and evaluation* -

Contact info

Andreea GRIGOROVSKI | andreea.grigorovschi@strasbourg.archi.fr
Architect and Urban planner-designer. Assoc. Prof. Strasbourg National School of Architecture, IMM Chair/AMUP-UR 7309.

Jeremy Allan HAWKINS | jeremy.hawkins@strasbourg.archi.fr
Poet-Urbanist. Lecturer. Strasbourg National School of Architecture, IMM Chair/AMUP-UR 7309 – ENSAS

Marie FRUIQUIERE | marie.fruiquiere@strasbourg.archi.fr
Architect and Urban planner-designer. Research engineer. IMM Chair/AMUP-UR 7309 – ENSAS

Thank you for your attention!

andreea.grigorovschi@
strasbourg.archi.fr



Funding Period
07/2018 – 06/2021

Co-Funding Project Partners



Associated Partners



Networks



QUESTIONS ET RÉPONES //

FRAGEN UND ANTWORTEN



**PAUSE-CAFÉ
(30 MIN)**



**KAFFEPAUSE
(30 MIN)**



Débats // Podiumsdiskussion

PROMOTION DE LA MOBILITÉ DURABLE DANS LA RÉGION DU RHIN SUPÉRIEUR // **FÖRDERUNG VON NACHHALTIGER MOBILITÄT IN DER OBERRHEINREGION**

Promotion de la mobilité durable dans la région du Rhin supérieur // Förderung von nachhaltiger Mobilität in der Oberrheinregion

Animation // Moderation



*M. Sc. Nora Baumgartner
KIT-DFIU*

Participant.e.s // Teilnehmer:innen



*Mairesse // Bürgermeisterin Monika Neuhöfer-Avdić
Ville de Lörrach // Stadt Lörrach*



*Dr. Eckhard Szimba
KIT-ECON*



*Asso. Prof. Dr.
Andreea Grigorovschi
ENSAS*



*Prof. Dr. Oliver Frör
Universität Koblenz-
Landau*



*M. Sc. Janusch Vanja-
Jehle
Universität de Fribourg*



*Dr. Nadège Blond
LIVE-UNISTRA*



Sustainable Mobility in the Upper Rhine Region

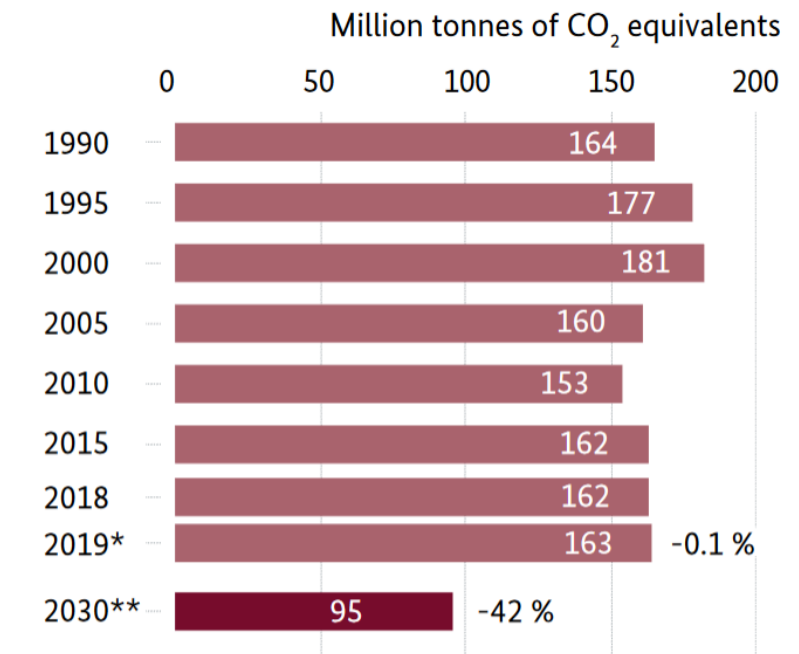
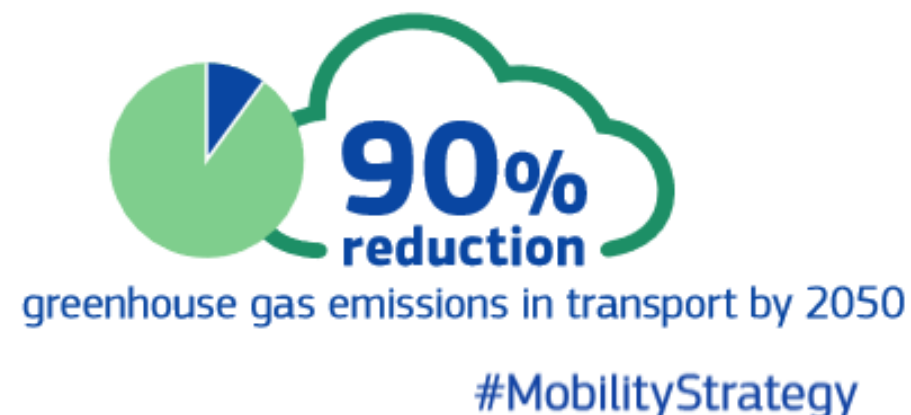
Prof. Dr. Barbara Koch
FeLis, Universität Freiburg

SuMo-Rhine – Fostering sustainable mobility in the Upper Rhine Region



Climate Challenges

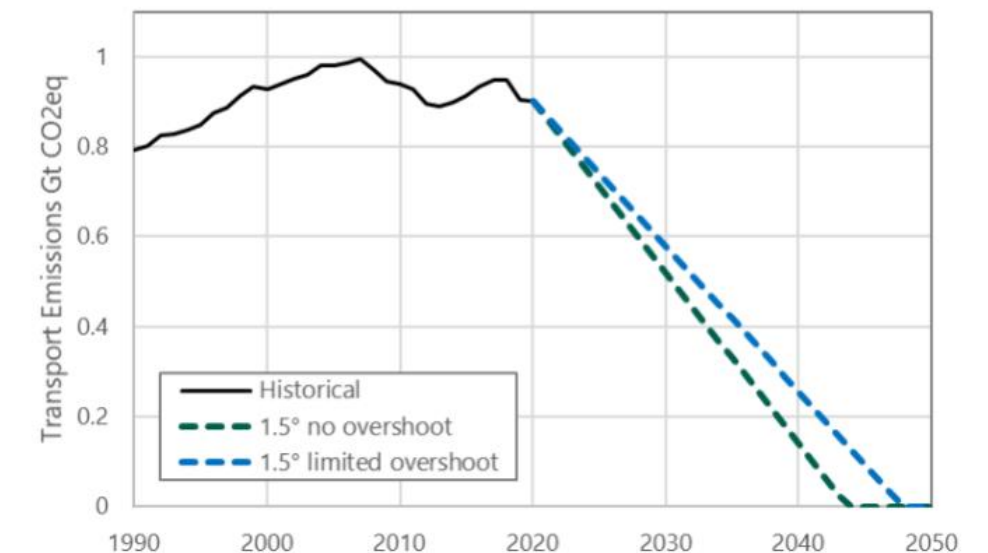
- ★ Strong commitment for emission reduction in transport
(European Green Deal, Climate Change Act, COP26 ...)
- ★ Only Increasing Emissions in the last 30 Years
(while total emissions decrease by 23%, transport increased by 24%)
- ★ Drop due to the Pandemic
(expected rebound after 2020)
- ★ Monitoring and reduction targets legally anchored
(Climate Change Act (Klimaschutzgesetz))
- ★ Yearly monitoring begins March 15, 2022



*Estimate **Reduction target compared with 1990

Sources: UBA (2020a), UBA (2020b)

Climate Action in Figures, BMU (2020)

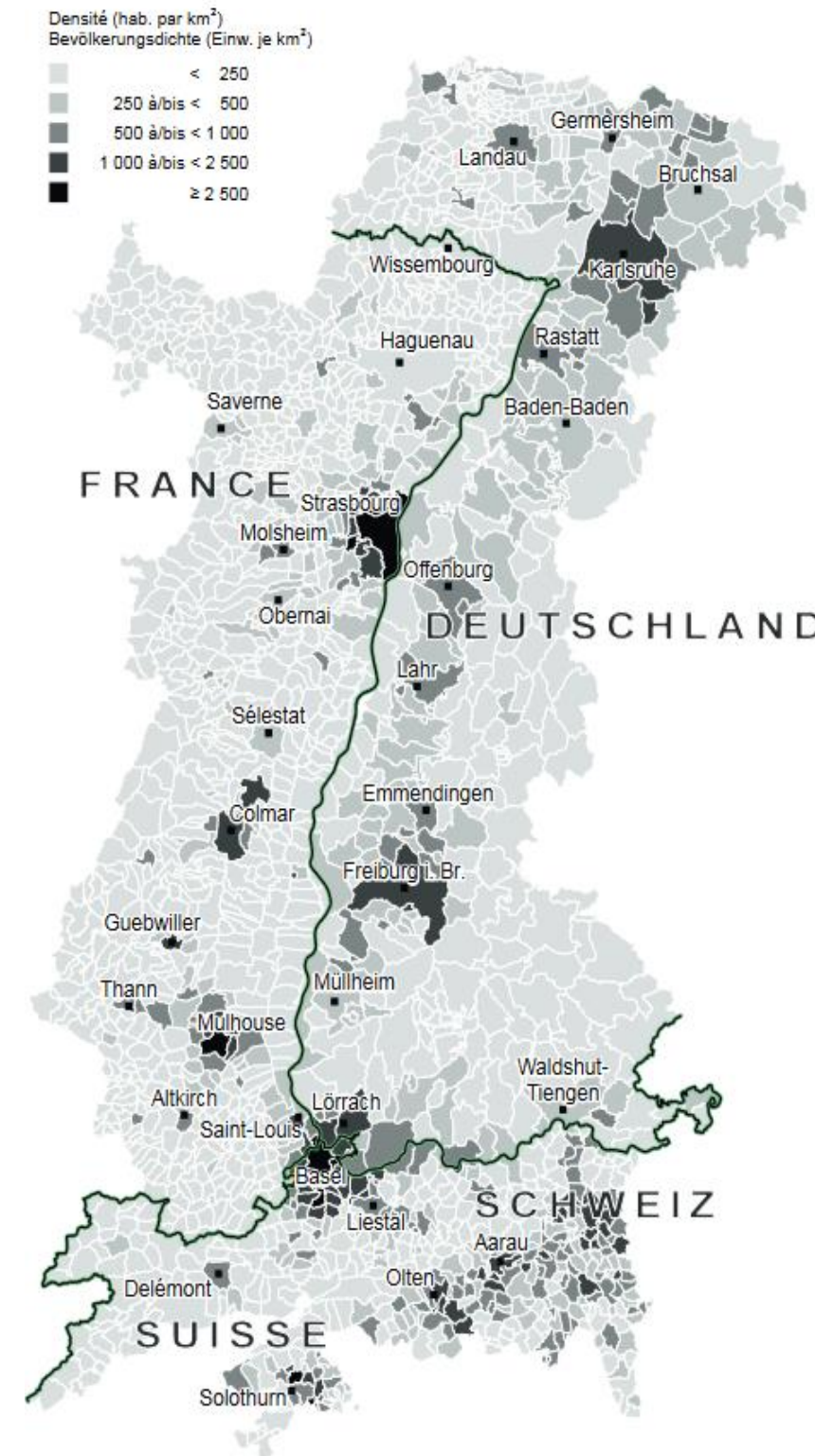


Net-zero-carbon Transport in Europe until 2050, Fraunhofer ISI (2021)

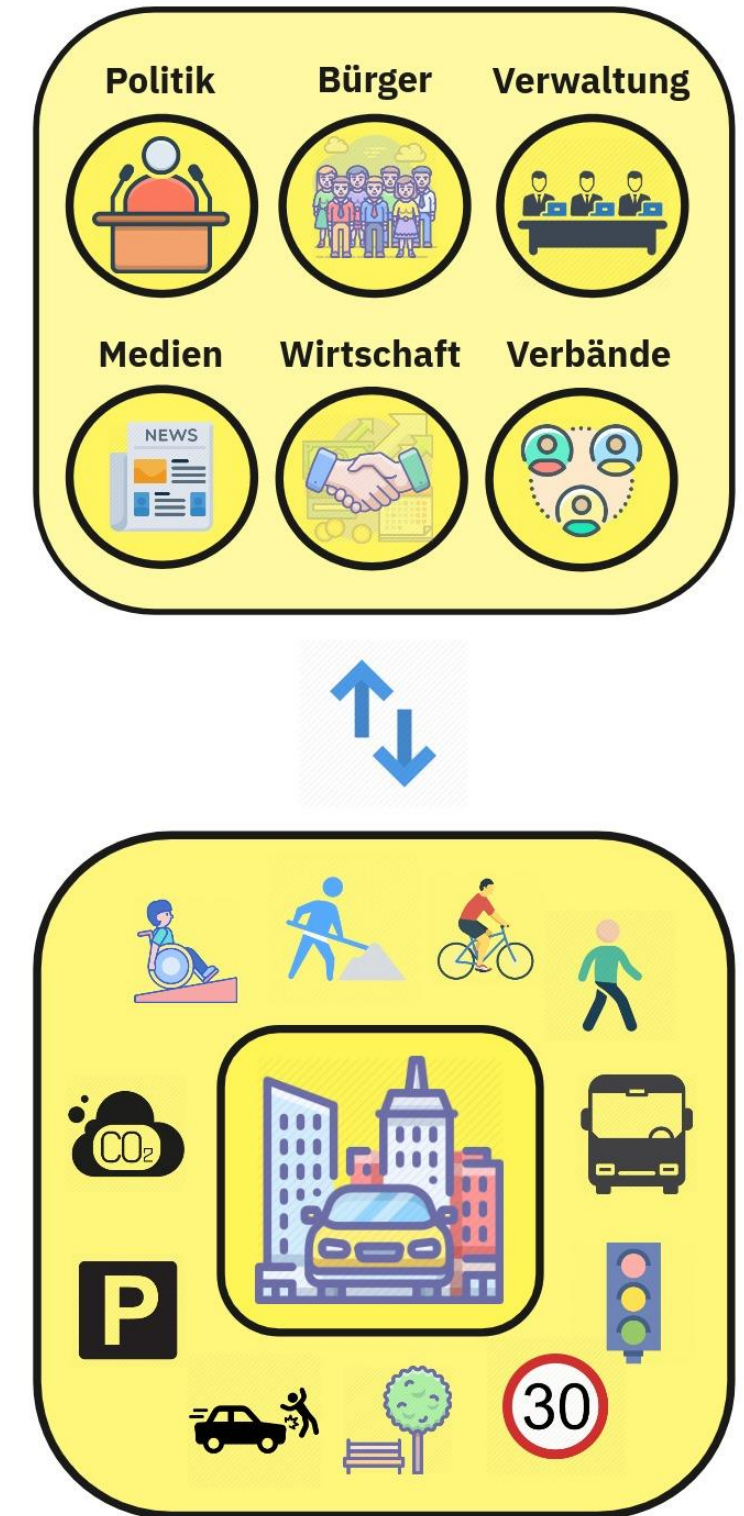
Mobility Challenges

Sustainable Mobility requires more than e-vehicles
Sustainable mobility culture, systemic approach, new behaviour

- ★ Municipalities are key players
Sustainable mobility is implemented at the municipal level
- ★ Limited resources
scarce personal, budgets weakened by corona
- ★ Upper Rhine Region has mainly rural areas
Low population density, longer distances



Oberrhein Zahlen und Fakten, Statistische Ämter am Oberrhein (2020)



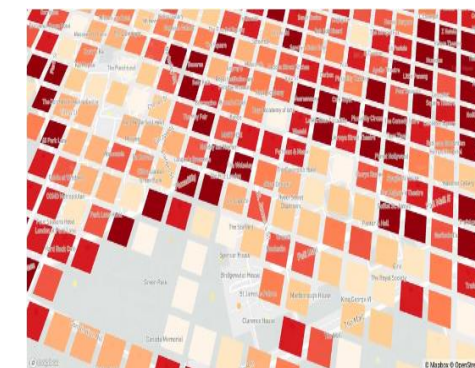
Strategic Benefits

- Excellence in Sustainability Research across borders
- SuMo forged an experienced transdisciplinary research team
(Environmental Sc., Social Sc., Big-Data, Urban planning, Engineering, Modelling et al.)
- Established innovative Co-Operation with international Data Providers/Sources
(Automated Exchange and Analysis Tools)
- Best-Practice Networks of municipal partners and institutions
- Evolve transportation expertise by monitoring and support implementation



Taking SuMo to Next Level

- ★ Data is key for implementing sustainable mobility solutions
 - Generate detailed data at municipal level,
 - Integrate upcoming data sources
 - Implement Monitoring and temporal resolution
- ★ Extend KINaMo in functionality and scope
 - Deepen dimensions and analysis
 - Extend regional scope for all Municipalities in the URR
 - Extend regional scope to national level (D, F, CH)
- ★ Develop Data-driven Solutions for Municipalities
 - High-resolution analysis for e.g. Public Transport Quality, Bicycle Safety, Accessibility for innovative Mobility Services (MasS)
- ★ Develop Data-driven Solutions for Citizens & Commerce
 - High-resolution analysis for addresses and Accessibility for various POIs



Thank you for your attention!

ferninfo@felis.uni-freiburg.de



Funding Period
07/2018 – 06/2021

Co-Funding Project Partners



Associated Partners



Networks



Closing



Project Period
07/2018 –12/2021

Co-Funding Project Partners



Associated Partners



Networks

